

## SEQUENCE LISTING

<110> The Wistar Institute  
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<120> METHODS FOR REGULATING BRCA1-BRCA2-CONTAINING COMPLEX ACTIVITY

<130> WSTR-0014B

<150> US 60/401,433

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<160> 26

<170> PatentIn version 3.1

<210> 1

<211> 3418

<212> PRT

<213> Homo sapiens

<400> 1

Met Pro Ile Gly Ser Lys Glu Arg Pro Thr Phe Phe Glu Ile Phe Lys  
1 5 10 15

Thr Arg Cys Asn Lys Ala Asp Leu Gly Pro Ile Ser Leu Asn Trp Phe  
20 25 30

Glu Glu Leu Ser Ser Glu Ala Pro Pro Tyr Asn Ser Glu Pro Ala Glu  
35 40 45

Glu Ser Glu His Lys Asn Asn Asn Tyr Glu Pro Asn Leu Phe Lys Thr  
50 55 60

Pro Gln Arg Lys Pro Ser Tyr Asn Gln Leu Ala Ser Thr Pro Ile Ile  
65 70 75 80

Phe Lys Glu Gln Gly Leu Thr Leu Pro Leu Tyr Gln Ser Pro Val Lys  
85 90 95

Glu Leu Asp Lys Phe Lys Leu Asp Leu Gly Arg Asn Val Pro Asn Ser  
100 105 110

Arg His Lys Ser Leu Arg Thr Val Lys Thr Lys Met Asp Gln Ala Asp  
115 120 125

Asp Val Ser Cys Pro Leu Leu Asn Ser Cys Leu Ser Glu Ser Pro Val

130		135		140											
Val 145	Leu 145	Gln 145	Cys 145	Thr 145	His 150	Val 150	Thr 150	Pro 150	Gln 155	Arg 155	Asp 155	Lys 155	Ser 155	Val 160	Val 160
Cys 165	Gly 165	Ser 165	Leu 165	Phe 165	His 165	Thr 165	Pro 170	Lys 170	Phe 170	Val 170	Lys 170	Gly 175	Arg 175	Gln 175	Thr 175
Pro 180	Lys 180	His 180	Ile 180	Ser 180	Glu 180	Ser 185	Leu 185	Gly 185	Ala 185	Glu 190	Val 190	Asp 190	Pro 190	Asp 190	Met 190
Ser 195	Trp 195	Ser 195	Ser 195	Ser 195	Leu 200	Ala 200	Thr 200	Pro 205	Pro 205	Thr 205	Leu 205	Ser 205	Ser 205	Thr 205	Val 205
Leu 210	Ile 210	Val 210	Arg 210	Asn 210	Glu 215	Glu 215	Ala 215	Ser 215	Glu 220	Thr 220	Val 220	Phe 220	Pro 220	His 220	Asp 220
Thr 225	Thr 225	Ala 225	Asn 225	Val 225	Lys 230	Ser 230	Tyr 230	Phe 230	Ser 235	Asn 235	His 235	Asp 235	Glu 240	Ser 240	Leu 240
Lys 245	Lys 245	Asn 245	Asp 245	Arg 245	Phe 245	Ile 245	Ala 245	Ser 250	Val 250	Thr 250	Asp 250	Ser 255	Glu 255	Asn 255	Thr 255
Asn 260	Gln 260	Arg 260	Glu 260	Ala 260	Ala 260	Ser 265	His 265	Gly 265	Phe 265	Gly 270	Lys 270	Thr 270	Ser 270	Gly 270	Asn 270
Ser 275	Phe 275	Lys 275	Val 275	Asn 275	Ser 275	Cys 275	Lys 280	Asp 280	His 280	Ile 280	Gly 285	Lys 285	Ser 285	Met 285	Pro 285
Asn 290	Val 290	Leu 290	Glu 290	Asp 290	Glu 295	Val 295	Tyr 295	Glu 295	Thr 295	Val 295	Val 300	Asp 300	Thr 300	Ser 300	Glu 300
Glu 305	Asp 305	Ser 305	Phe 305	Ser 305	Leu 310	Cys 310	Phe 310	Ser 310	Lys 315	Cys 315	Arg 315	Thr 315	Lys 315	Asn 315	Leu 320
Gln 325	Lys 325	Val 325	Arg 325	Thr 325	Ser 325	Lys 325	Thr 325	Arg 330	Lys 330	Lys 330	Ile 330	Phe 330	His 330	Glu 335	Ala 335
Asn 340	Ala 340	Asp 340	Glu 340	Cys 340	Glu 340	Lys 340	Ser 340	Lys 345	Asn 345	Gln 345	Val 345	Lys 345	Glu 350	Lys 350	Tyr 350
Ser 355	Phe 355	Val 355	Ser 355	Glu 355	Val 355	Glu 355	Pro 360	Asn 360	Asp 360	Thr 360	Asp 360	Pro 365	Leu 365	Asp 365	Ser 365

Asn Val Ala His Gln Lys Pro Phe Glu Ser Gly Ser Asp Lys Ile Ser  
 370 375 380

Lys Glu Val Val Pro Ser Leu Ala Cys Glu Trp Ser Gln Leu Thr Leu  
 385 390 395 400

Ser Gly Leu Asn Gly Ala Gln Met Glu Lys Ile Pro Leu Leu His Ile  
 405 410 415

Ser Ser Cys Asp Gln Asn Ile Ser Glu Lys Asp Leu Leu Asp Thr Glu  
 420 425 430

Asn Lys Arg Lys Lys Asp Phe Leu Thr Ser Glu Asn Ser Leu Pro Arg  
 435 440 445

Ile Ser Ser Leu Pro Lys Ser Glu Lys Pro Leu Asn Glu Glu Thr Val  
 450 455 460

Val Asn Lys Arg Asp Glu Glu Gln His Leu Glu Ser His Thr Asp Cys  
 465 470 475 480

Ile Leu Ala Val Lys Gln Ala Ile Ser Gly Thr Ser Pro Val Ala Ser  
 485 490 495

Ser Phe Gln Gly Ile Lys Lys Ser Ile Phe Arg Ile Arg Glu Ser Pro  
 500 505 510

Lys Glu Thr Phe Asn Ala Ser Phe Ser Gly His Met Thr Asp Pro Asn  
 515 520 525

Phe Lys Lys Glu Thr Glu Ala Ser Glu Ser Gly Leu Glu Ile His Thr  
 530 535 540

Val Cys Ser Gln Lys Glu Asp Ser Leu Cys Pro Asn Leu Ile Asp Asn  
 545 550 555 560

Gly Ser Trp Pro Ala Thr Thr Thr Gln Asn Ser Val Ala Leu Lys Asn  
 565 570 575

Ala Gly Leu Ile Ser Thr Leu Lys Lys Lys Thr Asn Lys Phe Ile Tyr  
 580 585 590

Ala Ile His Asp Glu Thr Ser Tyr Lys Gly Lys Lys Ile Pro Lys Asp  
 595 600 605

Gln	Lys	Ser	Glu	Leu	Ile	Asn	Cys	Ser	Ala	Gln	Phe	Glu	Ala	Asn	Ala	610	615	620
Phe	Glu	Ala	Pro	Leu	Thr	Phe	Ala	Asn	Ala	Asp	Ser	Gly	Leu	Leu	His	625	630	635
Ser	Ser	Val	Lys	Arg	Ser	Cys	Ser	Gln	Asn	Asp	Ser	Glu	Glu	Pro	Thr	645	650	655
Leu	Ser	Leu	Thr	Ser	Ser	Phe	Gly	Thr	Ile	Leu	Arg	Lys	Cys	Ser	Arg	660	665	670
Asn	Glu	Thr	Cys	Ser	Asn	Asn	Thr	Val	Ile	Ser	Gln	Asp	Leu	Asp	Tyr	675	680	685
Lys	Glu	Ala	Lys	Cys	Asn	Lys	Glu	Lys	Leu	Gln	Leu	Phe	Ile	Thr	Pro	690	695	700
Glu	Ala	Asp	Ser	Leu	Ser	Cys	Leu	Gln	Glu	Gly	Gln	Cys	Glu	Asn	Asp	705	710	715
Pro	Lys	Ser	Lys	Lys	Val	Ser	Asp	Ile	Lys	Glu	Glu	Val	Leu	Ala	Ala	725	730	735
Ala	Cys	His	Pro	Val	Gln	His	Ser	Lys	Val	Glu	Tyr	Ser	Asp	Thr	Asp	740	745	750
Phe	Gln	Ser	Gln	Lys	Ser	Leu	Leu	Tyr	Asp	His	Glu	Asn	Ala	Ser	Thr	755	760	765
Leu	Ile	Leu	Thr	Pro	Thr	Ser	Lys	Asp	Val	Leu	Ser	Asn	Leu	Val	Met	770	775	780
Ile	Ser	Arg	Gly	Lys	Glu	Ser	Tyr	Lys	Met	Ser	Asp	Lys	Leu	Lys	Gly	785	790	795
Asn	Asn	Tyr	Glu	Ser	Asp	Val	Glu	Leu	Thr	Lys	Asn	Ile	Pro	Met	Glu	805	810	815
Lys	Asn	Gln	Asp	Val	Cys	Ala	Leu	Asn	Glu	Asn	Tyr	Lys	Asn	Val	Glu	820	825	830
Leu	Leu	Pro	Pro	Glu	Lys	Tyr	Met	Arg	Val	Ala	Ser	Pro	Ser	Arg	Lys	835	840	845

Val Gln Phe Asn Gln Asn Thr Asn Leu Arg Val Ile Gln Lys Asn Gln  
 850 855 860

Glu Glu Thr Thr Ser Ile Ser Lys Ile Thr Val Asn Pro Asp Ser Glu  
 865 870 875 880

Glu Leu Phe Ser Asp Asn Glu Asn Asn Phe Val Phe Gln Val Ala Asn  
 885 890 895

Glu Arg Asn Asn Leu Ala Leu Gly Asn Thr Lys Glu Leu His Glu Thr  
 900 905 910

Asp Leu Thr Cys Val Asn Glu Pro Ile Phe Lys Asn Ser Thr Met Val  
 915 920 925

Leu Tyr Gly Asp Thr Gly Asp Lys Gln Ala Thr Gln Val Ser Ile Lys  
 930 935 940

Lys Asp Leu Val Tyr Val Leu Ala Glu Glu Asn Lys Asn Ser Val Lys  
 945 950 955 960

Gln His Ile Lys Met Thr Leu Gly Gln Asp Leu Lys Ser Asp Ile Ser  
 965 970 975

Leu Asn Ile Asp Lys Ile Pro Glu Lys Asn Asn Asp Tyr Met Asn Lys  
 980 985 990

Trp Ala Gly Leu Leu Gly Pro Ile Ser Asn His Ser Phe Gly Gly Ser  
 995 1000 1005

Phe Arg Thr Ala Ser Asn Lys Glu Ile Lys Leu Ser Glu His Asn  
 1010 1015 1020

Ile Lys Lys Ser Lys Met Phe Phe Lys Asp Ile Glu Glu Gln Tyr  
 1025 1030 1035

Pro Thr Ser Leu Ala Cys Val Glu Ile Val Asn Thr Leu Ala Leu  
 1040 1045 1050

Asp Asn Gln Lys Lys Leu Ser Lys Pro Gln Ser Ile Asn Thr Val  
 1055 1060 1065

Ser Ala His Leu Gln Ser Ser Val Val Val Ser Asp Cys Lys Asn

1070		1075		1080
Ser His 1085	Ile Thr Pro Gln	Met 1090	Leu Phe Ser Lys	Gln Asp Phe Asn 1095
Ser Asn 1100	His Asn Leu Thr	Pro 1105	Ser Gln Lys Ala	Glu Ile Thr Glu 1110
Leu Ser 1115	Thr Ile Leu Glu	Glu 1120	Ser Gly Ser Gln	Phe Glu Phe Thr 1125
Gln Phe 1130	Arg Lys Pro Ser	Tyr 1135	Ile Leu Gln Lys	Ser Thr Phe Glu 1140
Val Pro 1145	Glu Asn Gln Met	Thr 1150	Ile Leu Lys Thr	Thr Ser Glu Glu 1155
Cys Arg 1160	Asp Ala Asp Leu	His 1165	Val Ile Met Asn	Ala Pro Ser Ile 1170
Gly Gln 1175	Val Asp Ser Ser	Lys 1180	Gln Phe Glu Gly	Thr Val Glu Ile 1185
Lys Arg 1190	Lys Phe Ala Gly	Leu 1195	Leu Lys Asn Asp	Cys Asn Lys Ser 1200
Ala Ser 1205	Gly Tyr Leu Thr	Asp 1210	Glu Asn Glu Val	Gly Phe Arg Gly 1215
Phe Tyr 1220	Ser Ala His Gly	Thr 1225	Lys Leu Asn Val	Ser Thr Glu Ala 1230
Leu Gln 1235	Lys Ala Val Lys	Leu 1240	Phe Ser Asp Ile	Glu Asn Ile Ser 1245
Glu Glu 1250	Thr Ser Ala Glu	Val 1255	His Pro Ile Ser	Leu Ser Ser Ser 1260
Lys Cys 1265	His Asp Ser Val	Val 1270	Ser Met Phe Lys	Ile Glu Asn His 1275
Asn Asp 1280	Lys Thr Val Ser	Glu 1285	Lys Asn Asn Lys	Cys Gln Leu Ile 1290

Leu	Gln	Asn	Asn	Ile	Glu	Met	Thr	Thr	Gly	Thr	Phe	Val	Glu	Glu
1295						1300					1305			
Ile	Thr	Glu	Asn	Tyr	Lys	Arg	Asn	Thr	Glu	Asn	Glu	Asp	Asn	Lys
1310						1315					1320			
Tyr	Thr	Ala	Ala	Ser	Arg	Asn	Ser	His	Asn	Leu	Glu	Phe	Asp	Gly
1325						1330					1335			
Ser	Asp	Ser	Ser	Lys	Asn	Asp	Thr	Val	Cys	Ile	His	Lys	Asp	Glu
1340						1345					1350			
Thr	Asp	Leu	Leu	Phe	Thr	Asp	Gln	His	Asn	Ile	Cys	Leu	Lys	Leu
1355						1360					1365			
Ser	Gly	Gln	Phe	Met	Lys	Glu	Gly	Asn	Thr	Gln	Ile	Lys	Glu	Asp
1370						1375					1380			
Leu	Ser	Asp	Leu	Thr	Phe	Leu	Glu	Val	Ala	Lys	Ala	Gln	Glu	Ala
1385						1390					1395			
Cys	His	Gly	Asn	Thr	Ser	Asn	Lys	Glu	Gln	Leu	Thr	Ala	Thr	Lys
1400						1405					1410			
Thr	Glu	Gln	Asn	Ile	Lys	Asp	Phe	Glu	Thr	Ser	Asp	Thr	Phe	Phe
1415						1420					1425			
Gln	Thr	Ala	Ser	Gly	Lys	Asn	Ile	Ser	Val	Ala	Lys	Glu	Ser	Phe
1430						1435					1440			
Asn	Lys	Ile	Val	Asn	Phe	Phe	Asp	Gln	Lys	Pro	Glu	Glu	Leu	His
1445						1450					1455			
Asn	Phe	Ser	Leu	Asn	Ser	Glu	Leu	His	Ser	Asp	Ile	Arg	Lys	Asn
1460						1465					1470			
Lys	Met	Asp	Ile	Leu	Ser	Tyr	Glu	Glu	Thr	Asp	Ile	Val	Lys	His
1475						1480					1485			
Lys	Ile	Leu	Lys	Glu	Ser	Val	Pro	Val	Gly	Thr	Gly	Asn	Gln	Leu
1490						1495					1500			
Val	Thr	Phe	Gln	Gly	Gln	Pro	Glu	Arg	Asp	Glu	Lys	Ile	Lys	Glu
1505						1510					1515			

Pro	Thr	Leu	Leu	Gly	Phe	His	Thr	Ala	Ser	Gly	Lys	Lys	Val	Lys
1520						1525					1530			
Ile	Ala	Lys	Glu	Ser	Leu	Asp	Lys	Val	Lys	Asn	Leu	Phe	Asp	Glu
1535						1540					1545			
Lys	Glu	Gln	Gly	Thr	Ser	Glu	Ile	Thr	Ser	Phe	Ser	His	Gln	Trp
1550						1555					1560			
Ala	Lys	Thr	Leu	Lys	Tyr	Arg	Glu	Ala	Cys	Lys	Asp	Leu	Glu	Leu
1565						1570					1575			
Ala	Cys	Glu	Thr	Ile	Glu	Ile	Thr	Ala	Ala	Pro	Lys	Cys	Lys	Glu
1580						1585					1590			
Met	Gln	Asn	Ser	Leu	Asn	Asn	Asp	Lys	Asn	Leu	Val	Ser	Ile	Glu
1595						1600					1605			
Thr	Val	Val	Pro	Pro	Lys	Leu	Leu	Ser	Asp	Asn	Leu	Cys	Arg	Gln
1610						1615					1620			
Thr	Glu	Asn	Leu	Lys	Thr	Ser	Lys	Ser	Ile	Phe	Leu	Lys	Val	Lys
1625						1630					1635			
Val	His	Glu	Asn	Val	Glu	Lys	Glu	Thr	Ala	Lys	Ser	Pro	Ala	Thr
1640						1645					1650			
Cys	Tyr	Thr	Asn	Gln	Ser	Pro	Tyr	Ser	Val	Ile	Glu	Asn	Ser	Ala
1655						1660					1665			
Leu	Ala	Phe	Tyr	Thr	Ser	Cys	Ser	Arg	Lys	Thr	Ser	Val	Ser	Gln
1670						1675					1680			
Thr	Ser	Leu	Leu	Glu	Ala	Lys	Lys	Trp	Leu	Arg	Glu	Gly	Ile	Phe
1685						1690					1695			
Asp	Gly	Gln	Pro	Glu	Arg	Ile	Asn	Thr	Ala	Asp	Tyr	Val	Gly	Asn
1700						1705					1710			
Tyr	Leu	Tyr	Glu	Asn	Asn	Ser	Asn	Ser	Thr	Ile	Ala	Glu	Asn	Asp
1715						1720					1725			
Lys	Asn	His	Leu	Ser	Glu	Lys	Gln	Asp	Thr	Tyr	Leu	Ser	Asn	Ser
1730						1735					1740			



Ser	Met	Ser	Asn	Ser	Tyr	Ser	Tyr	His	Ser	Asp	Glu	Val	Tyr	Asn
	1745					1750					1755			
Asp	Ser	Gly	Tyr	Leu	Ser	Lys	Asn	Lys	Leu	Asp	Ser	Gly	Ile	Glu
	1760					1765					1770			
Pro	Val	Leu	Lys	Asn	Val	Glu	Asp	Gln	Lys	Asn	Thr	Ser	Phe	Ser
	1775					1780					1785			
Lys	Val	Ile	Ser	Asn	Val	Lys	Asp	Ala	Asn	Ala	Tyr	Pro	Gln	Thr
	1790					1795					1800			
Val	Asn	Glu	Asp	Ile	Cys	Val	Glu	Glu	Leu	Val	Thr	Ser	Ser	Ser
	1805					1810					1815			
Pro	Cys	Lys	Asn	Lys	Asn	Ala	Ala	Ile	Lys	Leu	Ser	Ile	Ser	Asn
	1820					1825					1830			
Ser	Asn	Asn	Phe	Glu	Val	Gly	Pro	Pro	Ala	Phe	Arg	Ile	Ala	Ser
	1835					1840					1845			
Gly	Lys	Ile	Val	Cys	Val	Ser	His	Glu	Thr	Ile	Lys	Lys	Val	Lys
	1850					1855					1860			
Asp	Ile	Phe	Thr	Asp	Ser	Phe	Ser	Lys	Val	Ile	Lys	Glu	Asn	Asn
	1865					1870					1875			
Glu	Asn	Lys	Ser	Lys	Ile	Cys	Gln	Thr	Lys	Ile	Met	Ala	Gly	Cys
	1880					1885					1890			
Tyr	Glu	Ala	Leu	Asp	Asp	Ser	Glu	Asp	Ile	Leu	His	Asn	Ser	Leu
	1895					1900					1905			
Asp	Asn	Asp	Glu	Cys	Ser	Thr	His	Ser	His	Lys	Val	Phe	Ala	Asp
	1910					1915					1920			
Ile	Gln	Ser	Glu	Glu	Ile	Leu	Gln	His	Asn	Gln	Asn	Met	Ser	Gly
	1925					1930					1935			
Leu	Glu	Lys	Val	Ser	Lys	Ile	Ser	Pro	Cys	Asp	Val	Ser	Leu	Glu
	1940					1945					1950			
Thr	Ser	Asp	Ile	Cys	Lys	Cys	Ser	Ile	Gly	Lys	Leu	His	Lys	Ser

1955	1960	1965
Val Ser 1970	Ser Ala Asn Thr Cys 1975	Gly Ile Phe Ser Thr 1980
Lys Ser 1985	Val Gln Val Ser Asp 1990	Ala Ser Leu Gln Asn 1995
Val Phe 2000	Ser Glu Ile Glu Asp 2005	Ser Thr Lys Gln Val 2010
Val Leu 2015	Phe Lys Ser Asn Glu 2020	His Ser Asp Gln Leu 2025
Glu Asn 2030	Thr Ala Ile Arg Thr 2035	Pro Glu His Leu Ile 2040
Gly Phe 2045	Ser Tyr Asn Val Val 2050	Asn Ser Ser Ala Phe 2055
Ser Thr 2060	Ala Ser Gly Lys Gln 2065	Val Ser Ile Leu Glu 2070
His Lys 2075	Val Lys Gly Val Leu 2080	Glu Glu Phe Asp Leu 2085
Glu His 2090	Ser Leu His Tyr Ser 2095	Pro Thr Ser Arg Gln 2100
Lys Ile 2105	Leu Pro Arg Val Asp 2110	Lys Arg Asn Pro Glu 2115
Asn Ser 2120	Glu Met Glu Lys Thr 2125	Cys Ser Lys Glu Phe 2130
Asn Asn 2135	Leu Asn Val Glu Gly 2140	Gly Ser Ser Glu Asn 2145
Ile Lys 2150	Val Ser Pro Tyr Leu 2155	Ser Gln Phe Gln Gln 2160
Gln Leu 2165	Val Leu Gly Thr Lys 2170	Val Ser Leu Val Glu 2175

Val	Leu	Gly	Lys	Glu	Gln	Ala	Ser	Pro	Lys	Asn	Val	Lys	Met	Glu
2180						2185					2190			
Ile	Gly	Lys	Thr	Glu	Thr	Phe	Ser	Asp	Val	Pro	Val	Lys	Thr	Asn
2195						2200					2205			
Ile	Glu	Val	Cys	Ser	Thr	Tyr	Ser	Lys	Asp	Ser	Glu	Asn	Tyr	Phe
2210						2215					2220			
Glu	Thr	Glu	Ala	Val	Glu	Ile	Ala	Lys	Ala	Phe	Met	Glu	Asp	Asp
2225						2230					2235			
Glu	Leu	Thr	Asp	Ser	Lys	Leu	Pro	Ser	His	Ala	Thr	His	Ser	Leu
2240						2245					2250			
Phe	Thr	Cys	Pro	Glu	Asn	Glu	Glu	Met	Val	Leu	Ser	Asn	Ser	Arg
2255						2260					2265			
Ile	Gly	Lys	Arg	Arg	Gly	Glu	Pro	Leu	Ile	Leu	Val	Gly	Glu	Pro
2270						2275					2280			
Ser	Ile	Lys	Arg	Asn	Leu	Leu	Asn	Glu	Phe	Asp	Arg	Ile	Ile	Glu
2285						2290					2295			
Asn	Gln	Glu	Lys	Ser	Leu	Lys	Ala	Ser	Lys	Ser	Thr	Pro	Asp	Gly
2300						2305					2310			
Thr	Ile	Lys	Asp	Arg	Arg	Leu	Phe	Met	His	His	Val	Ser	Leu	Glu
2315						2320					2325			
Pro	Ile	Thr	Cys	Val	Pro	Phe	Arg	Thr	Thr	Lys	Glu	Arg	Gln	Glu
2330						2335					2340			
Ile	Gln	Asn	Pro	Asn	Phe	Thr	Ala	Pro	Gly	Gln	Glu	Phe	Leu	Ser
2345						2350					2355			
Lys	Ser	His	Leu	Tyr	Glu	His	Leu	Thr	Leu	Glu	Lys	Ser	Ser	Ser
2360						2365					2370			
Asn	Leu	Ala	Val	Ser	Gly	His	Pro	Phe	Tyr	Gln	Val	Ser	Ala	Thr
2375						2380					2385			
Arg	Asn	Glu	Lys	Met	Arg	His	Leu	Ile	Thr	Thr	Gly	Arg	Pro	Thr
2390						2395					2400			



Trp	Lys	Leu	Ala	Ala	Met	Glu	Cys	Ala	Phe	Pro	Lys	Glu	Phe	Ala
2630						2635					2640			
Asn	Arg	Cys	Leu	Ser	Pro	Glu	Arg	Val	Leu	Leu	Gln	Leu	Lys	Tyr
2645						2650					2655			
Arg	Tyr	Asp	Thr	Glu	Ile	Asp	Arg	Ser	Arg	Arg	Ser	Ala	Ile	Lys
2660						2665					2670			
Lys	Ile	Met	Glu	Arg	Asp	Asp	Thr	Ala	Ala	Lys	Thr	Leu	Val	Leu
2675						2680					2685			
Cys	Val	Ser	Asp	Ile	Ile	Ser	Leu	Ser	Ala	Asn	Ile	Ser	Glu	Thr
2690						2695					2700			
Ser	Ser	Asn	Lys	Thr	Ser	Ser	Ala	Asp	Thr	Gln	Lys	Val	Ala	Ile
2705						2710					2715			
Ile	Glu	Leu	Thr	Asp	Gly	Trp	Tyr	Ala	Val	Lys	Ala	Gln	Leu	Asp
2720						2725					2730			
Pro	Pro	Leu	Leu	Ala	Val	Leu	Lys	Asn	Gly	Arg	Leu	Thr	Val	Gly
2735						2740					2745			
Gln	Lys	Ile	Ile	Leu	His	Gly	Ala	Glu	Leu	Val	Gly	Ser	Pro	Asp
2750						2755					2760			
Ala	Cys	Thr	Pro	Leu	Glu	Ala	Pro	Glu	Ser	Leu	Met	Leu	Lys	Ile
2765						2770					2775			
Ser	Ala	Asn	Ser	Thr	Arg	Pro	Ala	Arg	Trp	Tyr	Thr	Lys	Leu	Gly
2780						2785					2790			
Phe	Phe	Pro	Asp	Pro	Arg	Pro	Phe	Pro	Leu	Pro	Leu	Ser	Ser	Leu
2795						2800					2805			
Phe	Ser	Asp	Gly	Gly	Asn	Val	Gly	Cys	Val	Asp	Val	Ile	Ile	Gln
2810						2815					2820			
Arg	Ala	Tyr	Pro	Ile	Gln	Trp	Met	Glu	Lys	Thr	Ser	Ser	Gly	Leu
2825						2830					2835			
Tyr	Ile	Phe	Arg	Asn	Glu	Arg	Glu	Glu	Glu	Lys	Glu	Ala	Ala	Lys

2840		2845		2850
Tyr Val	Glu Ala Gln Gln	Lys Arg Leu Glu Ala	Leu Phe Thr Lys	
2855		2860	2865	
Ile Gln	Glu Glu Phe Glu	Glu His Glu Glu Asn	Thr Thr Lys Pro	
2870		2875	2880	
Tyr Leu	Pro Ser Arg Ala	Leu Thr Arg Gln Gln	Val Arg Ala Leu	
2885		2890	2895	
Gln Asp	Gly Ala Glu Leu	Tyr Glu Ala Val Lys	Asn Ala Ala Asp	
2900		2905	2910	
Pro Ala	Tyr Leu Glu Gly	Tyr Phe Ser Glu Glu	Gln Leu Arg Ala	
2915		2920	2925	
Leu Asn	Asn His Arg Gln	Met Leu Asn Asp Lys	Lys Gln Ala Gln	
2930		2935	2940	
Ile Gln	Leu Glu Ile Arg	Lys Ala Met Glu Ser	Ala Glu Gln Lys	
2945		2950	2955	
Glu Gln	Gly Leu Ser Arg	Asp Val Thr Thr Val	Trp Lys Leu Arg	
2960		2965	2970	
Ile Val	Ser Tyr Ser Lys	Lys Glu Lys Asp Ser	Val Ile Leu Ser	
2975		2980	2985	
Ile Trp	Arg Pro Ser Ser	Asp Leu Tyr Ser Leu	Leu Thr Glu Gly	
2990		2995	3000	
Lys Arg	Tyr Arg Ile Tyr	His Leu Ala Thr Ser	Lys Ser Lys Ser	
3005		3010	3015	
Lys Ser	Glu Arg Ala Asn	Ile Gln Leu Ala Ala	Thr Lys Lys Thr	
3020		3025	3030	
Gln Tyr	Gln Gln Leu Pro	Val Ser Asp Glu Ile	Leu Phe Gln Ile	
3035		3040	3045	
Tyr Gln	Pro Arg Glu Pro	Leu His Phe Ser Lys	Phe Leu Asp Pro	
3050		3055	3060	

Asp	Phe	Gln	Pro	Ser	Cys	Ser	Glu	Val	Asp	Leu	Ile	Gly	Phe	Val
3065						3070					3075			
Val	Ser	Val	Val	Lys	Lys	Thr	Gly	Leu	Ala	Pro	Phe	Val	Tyr	Leu
3080						3085					3090			
Ser	Asp	Glu	Cys	Tyr	Asn	Leu	Leu	Ala	Ile	Lys	Phe	Trp	Ile	Asp
3095						3100					3105			
Leu	Asn	Glu	Asp	Ile	Ile	Lys	Pro	His	Met	Leu	Ile	Ala	Ala	Ser
3110						3115					3120			
Asn	Leu	Gln	Trp	Arg	Pro	Glu	Ser	Lys	Ser	Gly	Leu	Leu	Thr	Leu
3125						3130					3135			
Phe	Ala	Gly	Asp	Phe	Ser	Val	Phe	Ser	Ala	Ser	Pro	Lys	Glu	Gly
3140						3145					3150			
His	Phe	Gln	Glu	Thr	Phe	Asn	Lys	Met	Lys	Asn	Thr	Val	Glu	Asn
3155						3160					3165			
Ile	Asp	Ile	Leu	Cys	Asn	Glu	Ala	Glu	Asn	Lys	Leu	Met	His	Ile
3170						3175					3180			
Leu	His	Ala	Asn	Asp	Pro	Lys	Trp	Ser	Thr	Pro	Thr	Lys	Asp	Cys
3185						3190					3195			
Thr	Ser	Gly	Pro	Tyr	Thr	Ala	Gln	Ile	Ile	Pro	Gly	Thr	Gly	Asn
3200						3205					3210			
Lys	Leu	Leu	Met	Ser	Ser	Pro	Asn	Cys	Glu	Ile	Tyr	Tyr	Gln	Ser
3215						3220					3225			
Pro	Leu	Ser	Leu	Cys	Met	Ala	Lys	Arg	Lys	Ser	Val	Ser	Thr	Pro
3230						3235					3240			
Val	Ser	Ala	Gln	Met	Thr	Ser	Lys	Ser	Cys	Lys	Gly	Glu	Lys	Glu
3245						3250					3255			
Ile	Asp	Asp	Gln	Lys	Asn	Cys	Lys	Lys	Arg	Arg	Ala	Leu	Asp	Phe
3260						3265					3270			
Leu	Ser	Arg	Leu	Pro	Leu	Pro	Pro	Pro	Val	Ser	Pro	Ile	Cys	Thr
3275						3280					3285			

Phe Val Ser Pro Ala Ala Gln Lys Ala Phe Gln Pro Pro Arg Ser  
3290 3295 3300

Cys Gly Thr Lys Tyr Glu Thr Pro Ile Lys Lys Lys Glu Leu Asn  
3305 3310 3315

Ser Pro Gln Met Thr Pro Phe Lys Lys Phe Asn Glu Ile Ser Leu  
3320 3325 3330

Leu Glu Ser Asn Ser Ile Ala Asp Glu Glu Leu Ala Leu Ile Asn  
3335 3340 3345

Thr Gln Ala Leu Leu Ser Gly Ser Thr Gly Glu Lys Gln Phe Ile  
3350 3355 3360

Ser Val Ser Glu Ser Thr Arg Thr Ala Pro Thr Ser Ser Glu Asp  
3365 3370 3375

Tyr Leu Arg Leu Lys Arg Arg Cys Thr Thr Ser Leu Ile Lys Glu  
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Gln Glu Ser Ser Gln Ala Ser Thr Glu Glu Cys Glu Lys Asn Lys  
3395 3400 3405

Gln Asp Thr Ile Thr Thr Lys Lys Tyr Ile  
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Met Asp Leu Ser Ala Leu Arg Val Glu Glu Val Gln Asn Val Ile Asn  
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Ala Met Gln Lys Ile Leu Glu Cys Pro Ile Cys Leu Glu Leu Ile Lys  
20 25 30

Glu Pro Val Ser Thr Lys Cys Asp His Ile Phe Cys Lys Phe Cys Met  
35 40 45

Leu Lys Leu Leu Asn Gln Lys Lys Gly Pro Ser Gln Cys Pro Leu Cys  
50 55 60



Lys Asn Asp Ile Thr Lys Arg Ser Leu Gln Glu Ser Thr Arg Phe Ser  
65 70 75 80

Gln Leu Val Glu Glu Leu Leu Lys Ile Ile Cys Ala Phe Gln Leu Asp  
85 90 95

Thr Gly Leu Glu Tyr Ala Asn Ser Tyr Asn Phe Ala Lys Lys Glu Asn  
100 105 110

Asn Ser Pro Glu His Leu Lys Asp Glu Val Ser Ile Ile Gln Ser Met  
115 120 125

Gly Tyr Arg Asn Arg Ala Lys Arg Leu Leu Gln Ser Glu Pro Glu Asn  
130 135 140

Pro Ser Leu Gln Glu Thr Ser Leu Ser Val Gln Leu Ser Asn Leu Gly  
145 150 155 160

Thr Val Arg Thr Leu Arg Thr Lys Gln Arg Ile Gln Pro Gln Lys Thr  
165 170 175

Ser Val Tyr Ile Glu Leu Gly Ser Asp Ser Ser Glu Asp Thr Val Asn  
180 185 190

Lys Ala Thr Tyr Cys Ser Val Gly Asp Gln Glu Leu Leu Gln Ile Thr  
195 200 205

Pro Gln Gly Thr Arg Asp Glu Ile Ser Leu Asp Ser Ala Lys Lys Ala  
210 215 220

Ala Cys Glu Phe Ser Glu Thr Asp Val Thr Asn Thr Glu His His Gln  
225 230 235 240

Pro Ser Asn Asn Asp Leu Asn Thr Thr Glu Lys Arg Ala Ala Glu Arg  
245 250 255

His Pro Glu Lys Tyr Gln Gly Ser Ser Val Ser Asn Leu His Val Glu  
260 265 270

Pro Cys Gly Thr Asn Thr His Ala Ser Ser Leu Gln His Glu Asn Ser  
275 280 285

Ser Leu Leu Leu Thr Lys Asp Arg Met Asn Val Glu Lys Ala Glu Phe  
290 295 300

Cys Asn Lys Ser Lys Gln Pro Gly Leu Ala Arg Ser Gln His Asn Arg  
305 310 315 320

Trp Ala Gly Ser Lys Glu Thr Cys Asn Asp Arg Arg Thr Pro Ser Thr  
325 330 335

Glu Lys Lys Val Asp Leu Asn Ala Asp Pro Leu Cys Glu Arg Lys Glu  
340 345 350

Trp Asn Lys Gln Lys Leu Pro Cys Ser Glu Asn Pro Arg Asp Thr Glu  
355 360 365

Asp Val Pro Trp Ile Thr Leu Asn Ser Ser Ile Gln Lys Val Asn Glu  
370 375 380

Trp Phe Ser Arg Ser Asp Glu Leu Leu Gly Ser Asp Asp Ser His Asp  
385 390 395 400

Gly Glu Ser Glu Ser Asn Ala Lys Val Ala Asp Val Leu Asp Val Leu  
405 410 415

Asn Glu Val Asp Glu Tyr Ser Gly Ser Ser Glu Lys Ile Asp Leu Leu  
420 425 430

Ala Ser Asp Pro His Glu Ala Leu Ile Cys Lys Ser Glu Arg Val His  
435 440 445

Ser Lys Ser Val Glu Ser Asn Ile Glu Asp Lys Ile Phe Gly Lys Thr  
450 455 460

Tyr Arg Lys Lys Ala Ser Leu Pro Asn Leu Ser His Val Thr Glu Asn  
465 470 475 480

Leu Ile Ile Gly Ala Phe Val Thr Glu Pro Gln Ile Ile Gln Glu Arg  
485 490 495

Pro Leu Thr Asn Lys Leu Lys Arg Lys Arg Arg Pro Thr Ser Gly Leu  
500 505 510

His Pro Glu Asp Phe Ile Lys Lys Ala Asp Leu Ala Val Gln Lys Thr  
515 520 525

Pro Glu Met Ile Asn Gln Gly Thr Asn Gln Thr Glu Gln Asn Gly Gln

530		535		540
Val Met Asn Ile Thr Asn Ser Gly His Glu Asn Lys Thr Lys Gly Asp				
545		550		555 560
Ser Ile Gln Asn Glu Lys Asn Pro Asn Pro Ile Glu Ser Leu Glu Lys				
		565		570 575
Glu Ser Ala Phe Lys Thr Lys Ala Glu Pro Ile Ser Ser Ser Ile Ser				
		580		585 590
Asn Met Glu Leu Glu Leu Asn Ile His Asn Ser Lys Ala Pro Lys Lys				
		595		600 605
Asn Arg Leu Arg Arg Lys Ser Ser Thr Arg His Ile His Ala Leu Glu				
		610		615 620
Leu Val Val Ser Arg Asn Leu Ser Pro Pro Asn Cys Thr Glu Leu Gln				
		625		630 635 640
Ile Asp Ser Cys Ser Ser Ser Glu Glu Ile Lys Lys Lys Lys Tyr Asn				
		645		650 655
Gln Met Pro Val Arg His Ser Arg Asn Leu Gln Leu Met Glu Gly Lys				
		660		665 670
Glu Pro Ala Thr Gly Ala Lys Lys Ser Asn Lys Pro Asn Glu Gln Thr				
		675		680 685
Ser Lys Arg His Asp Ser Asp Thr Phe Pro Glu Leu Lys Leu Thr Asn				
		690		695 700
Ala Pro Gly Ser Phe Thr Lys Cys Ser Asn Thr Ser Glu Leu Lys Glu				
		705		710 715 720
Phe Val Asn Pro Ser Leu Pro Arg Glu Glu Lys Glu Glu Lys Leu Glu				
		725		730 735
Thr Val Lys Val Ser Asn Asn Ala Glu Asp Pro Lys Asp Leu Met Leu				
		740		745 750
Ser Gly Glu Arg Val Leu Gln Thr Glu Arg Ser Val Glu Ser Ser Ser				
		755		760 765

Ile	Ser	Leu	Val	Pro	Gly	Thr	Asp	Tyr	Gly	Thr	Gln	Glu	Ser	Ile	Ser	770	775	780
Leu	Leu	Glu	Val	Ser	Thr	Leu	Gly	Lys	Ala	Lys	Thr	Glu	Pro	Asn	Lys	785	790	795 800
Cys	Val	Ser	Gln	Cys	Ala	Ala	Phe	Glu	Asn	Pro	Lys	Gly	Leu	Ile	His	805	810	815
Gly	Cys	Ser	Lys	Asp	Asn	Arg	Asn	Asp	Thr	Glu	Gly	Phe	Lys	Tyr	Pro	820	825	830
Leu	Gly	His	Glu	Val	Asn	His	Ser	Arg	Glu	Thr	Ser	Ile	Glu	Met	Glu	835	840	845
Glu	Ser	Glu	Leu	Asp	Ala	Gln	Tyr	Leu	Gln	Asn	Thr	Phe	Lys	Val	Ser	850	855	860
Lys	Arg	Gln	Ser	Phe	Ala	Pro	Phe	Ser	Asn	Pro	Gly	Asn	Ala	Glu	Glu	865	870	875 880
Glu	Cys	Ala	Thr	Phe	Ser	Ala	His	Ser	Gly	Ser	Leu	Lys	Lys	Gln	Ser	885	890	895
Pro	Lys	Val	Thr	Phe	Glu	Cys	Glu	Gln	Lys	Glu	Glu	Asn	Gln	Gly	Lys	900	905	910
Asn	Glu	Ser	Asn	Ile	Lys	Pro	Val	Gln	Thr	Val	Asn	Ile	Thr	Ala	Gly	915	920	925
Phe	Pro	Val	Val	Gly	Gln	Lys	Asp	Lys	Pro	Val	Asp	Asn	Ala	Lys	Cys	930	935	940
Ser	Ile	Lys	Gly	Gly	Ser	Arg	Phe	Cys	Leu	Ser	Ser	Gln	Phe	Arg	Gly	945	950	955 960
Asn	Glu	Thr	Gly	Leu	Ile	Thr	Pro	Asn	Lys	His	Gly	Leu	Leu	Gln	Asn	965	970	975
Pro	Tyr	Arg	Ile	Pro	Pro	Leu	Phe	Pro	Ile	Lys	Ser	Phe	Val	Lys	Thr	980	985	990
Lys	Cys	Lys	Lys	Asn	Leu	Leu	Glu	Glu	Asn	Phe	Glu	Glu	His	Ser	Met	995	1000	1005

Ser	Pro	Glu	Arg	Glu	Met	Gly	Asn	Glu	Asn	Ile	Pro	Ser	Thr	Val
1010						1015					1020			
Ser	Thr	Ile	Ser	Arg	Asn	Asn	Ile	Arg	Glu	Asn	Val	Phe	Lys	Glu
1025						1030					1035			
Ala	Ser	Ser	Ser	Asn	Ile	Asn	Glu	Val	Gly	Ser	Ser	Thr	Asn	Glu
1040						1045					1050			
Val	Gly	Ser	Ser	Ile	Asn	Glu	Ile	Gly	Ser	Ser	Asp	Glu	Asn	Ile
1055						1060					1065			
Gln	Ala	Glu	Leu	Gly	Arg	Asn	Arg	Gly	Pro	Lys	Leu	Asn	Ala	Met
1070						1075					1080			
Leu	Arg	Leu	Gly	Val	Leu	Gln	Pro	Glu	Val	Tyr	Lys	Gln	Ser	Leu
1085						1090					1095			
Pro	Gly	Ser	Asn	Cys	Lys	His	Pro	Glu	Ile	Lys	Lys	Gln	Glu	Tyr
1100						1105					1110			
Glu	Glu	Val	Val	Gln	Thr	Val	Asn	Thr	Asp	Phe	Ser	Pro	Tyr	Leu
1115						1120					1125			
Ile	Ser	Asp	Asn	Leu	Glu	Gln	Pro	Met	Gly	Ser	Ser	His	Ala	Ser
1130						1135					1140			
Gln	Val	Cys	Ser	Glu	Thr	Pro	Asp	Asp	Leu	Leu	Asp	Asp	Gly	Glu
1145						1150					1155			
Ile	Lys	Glu	Asp	Thr	Ser	Phe	Ala	Glu	Asn	Asp	Ile	Lys	Glu	Ser
1160						1165					1170			
Ser	Ala	Val	Phe	Ser	Lys	Ser	Val	Gln	Lys	Gly	Glu	Leu	Ser	Arg
1175						1180					1185			
Ser	Pro	Ser	Pro	Phe	Thr	His	Thr	His	Leu	Ala	Gln	Gly	Tyr	Arg
1190						1195					1200			
Arg	Gly	Ala	Lys	Lys	Leu	Glu	Ser	Ser	Glu	Glu	Asn	Leu	Ser	Ser
1205						1210					1215			
Glu	Asp	Glu	Glu	Leu	Pro	Cys	Phe	Gln	His	Leu	Leu	Phe	Gly	Lys
1220						1225					1230			

Val	Asn	Asn	Ile	Pro	Ser	Gln	Ser	Thr	Arg	His	Ser	Thr	Val	Ala
1235						1240					1245			
Thr	Glu	Cys	Leu	Ser	Lys	Asn	Thr	Glu	Glu	Asn	Leu	Leu	Ser	Leu
1250						1255					1260			
Lys	Asn	Ser	Leu	Asn	Asp	Cys	Ser	Asn	Gln	Val	Ile	Leu	Ala	Lys
1265						1270					1275			
Ala	Ser	Gln	Glu	His	His	Leu	Ser	Glu	Glu	Thr	Lys	Cys	Ser	Ala
1280						1285					1290			
Ser	Leu	Phe	Ser	Ser	Gln	Cys	Ser	Glu	Leu	Glu	Asp	Leu	Thr	Ala
1295						1300					1305			
Asn	Thr	Asn	Thr	Gln	Asp	Pro	Phe	Leu	Ile	Gly	Ser	Ser	Lys	Gln
1310						1315					1320			
Met	Arg	His	Gln	Ser	Glu	Ser	Gln	Gly	Val	Gly	Leu	Ser	Asp	Lys
1325						1330					1335			
Glu	Leu	Val	Ser	Asp	Asp	Glu	Glu	Arg	Gly	Thr	Gly	Leu	Glu	Glu
1340						1345					1350			
Asn	Asn	Gln	Glu	Glu	Gln	Ser	Met	Asp	Ser	Asn	Leu	Gly	Glu	Ala
1355						1360					1365			
Ala	Ser	Gly	Cys	Glu	Ser	Glu	Thr	Ser	Val	Ser	Glu	Asp	Cys	Ser
1370						1375					1380			
Gly	Leu	Ser	Ser	Gln	Ser	Asp	Ile	Leu	Thr	Thr	Gln	Gln	Arg	Asp
1385						1390					1395			
Thr	Met	Gln	His	Asn	Leu	Ile	Lys	Leu	Gln	Gln	Glu	Met	Ala	Glu
1400						1405					1410			
Leu	Glu	Ala	Val	Leu	Glu	Gln	His	Gly	Ser	Gln	Pro	Ser	Asn	Ser
1415						1420					1425			
Tyr	Pro	Ser	Ile	Ile	Ser	Asp	Ser	Ser	Ala	Leu	Glu	Asp	Leu	Arg
1430						1435					1440			
Asn	Pro	Glu	Gln	Ser	Thr	Ser	Glu	Lys	Ala	Val	Leu	Thr	Ser	Gln

1445		1450		1455
Lys Ser Ser Glu Tyr Pro Ile Ser Gln Asn Pro Glu Gly Leu Ser				
1460		1465		1470
Ala Asp Lys Phe Glu Val Ser Ala Asp Ser Ser Thr Ser Lys Asn				
1475		1480		1485
Lys Glu Pro Gly Val Glu Arg Ser Ser Pro Ser Lys Cys Pro Ser				
1490		1495		1500
Leu Asp Asp Arg Trp Tyr Met His Ser Cys Ser Gly Ser Leu Gln				
1505		1510		1515
Asn Arg Asn Tyr Pro Ser Gln Glu Glu Leu Ile Lys Val Val Asp				
1520		1525		1530
Val Glu Glu Gln Gln Leu Glu Glu Ser Gly Pro His Asp Leu Thr				
1535		1540		1545
Glu Thr Ser Tyr Leu Pro Arg Gln Asp Leu Glu Gly Thr Pro Tyr				
1550		1555		1560
Leu Glu Ser Gly Ile Ser Leu Phe Ser Asp Asp Pro Glu Ser Asp				
1565		1570		1575
Pro Ser Glu Asp Arg Ala Pro Glu Ser Ala Arg Val Gly Asn Ile				
1580		1585		1590
Pro Ser Ser Thr Ser Ala Leu Lys Val Pro Gln Leu Lys Val Ala				
1595		1600		1605
Glu Ser Ala Gln Ser Pro Ala Ala Ala His Thr Thr Asp Thr Ala				
1610		1615		1620
Gly Tyr Asn Ala Met Glu Glu Ser Val Ser Arg Glu Lys Pro Glu				
1625		1630		1635
Leu Thr Ala Ser Thr Glu Arg Val Asn Lys Arg Met Ser Met Val				
1640		1645		1650
Val Ser Gly Leu Thr Pro Glu Glu Phe Met Leu Val Tyr Lys Phe				
1655		1660		1665

Ala	Arg	Lys	His	His	Ile	Thr	Leu	Thr	Asn	Leu	Ile	Thr	Glu	Glu
1670						1675					1680			
Thr	Thr	His	Val	Val	Met	Lys	Thr	Asp	Ala	Glu	Phe	Val	Cys	Glu
1685						1690					1695			
Arg	Thr	Leu	Lys	Tyr	Phe	Leu	Gly	Ile	Ala	Gly	Gly	Lys	Trp	Val
1700						1705					1710			
Val	Ser	Tyr	Phe	Trp	Val	Thr	Gln	Ser	Ile	Lys	Glu	Arg	Lys	Met
1715						1720					1725			
Leu	Asn	Glu	His	Asp	Phe	Glu	Val	Arg	Gly	Asp	Val	Val	Asn	Gly
1730						1735					1740			
Arg	Asn	His	Gln	Gly	Pro	Lys	Arg	Ala	Arg	Glu	Ser	Gln	Asp	Arg
1745						1750					1755			
Lys	Ile	Phe	Arg	Gly	Leu	Glu	Ile	Cys	Cys	Tyr	Gly	Pro	Phe	Thr
1760						1765					1770			
Asn	Met	Pro	Thr	Asp	Gln	Leu	Glu	Trp	Met	Val	Gln	Leu	Cys	Gly
1775						1780					1785			
Ala	Ser	Val	Val	Lys	Glu	Leu	Ser	Ser	Phe	Thr	Leu	Gly	Thr	Gly
1790						1795					1800			
Val	His	Pro	Ile	Val	Val	Val	Gln	Pro	Asp	Ala	Trp	Thr	Glu	Asp
1805						1810					1815			
Asn	Gly	Phe	His	Ala	Ile	Gly	Gln	Met	Cys	Glu	Ala	Pro	Val	Val
1820						1825					1830			
Thr	Arg	Glu	Trp	Val	Leu	Asp	Ser	Val	Ala	Leu	Tyr	Gln	Cys	Gln
1835						1840					1845			
Glu	Leu	Asp	Thr	Tyr	Leu	Ile	Pro	Gln	Ile	Pro	His	Ser	His	Tyr
1850						1855					1860			

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 <213> Homo sapiens  
  
 <400> 3



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Met	Ala	Met	Gln	Met	Gln	Leu	Glu	Ala	Asn	Ala	Asp	Thr	Ser	Val	Glu	1	5	10	15
Glu	Glu	Ser	Phe	Gly	Pro	Gln	Pro	Ile	Ser	Arg	Leu	Glu	Gln	Cys	Gly	20	25	30	
Ile	Asn	Ala	Asn	Asp	Val	Lys	Lys	Leu	Glu	Glu	Ala	Gly	Phe	His	Thr	35	40	45	
Val	Glu	Ala	Val	Ala	Tyr	Ala	Pro	Lys	Lys	Glu	Leu	Ile	Asn	Ile	Lys	50	55	60	
Gly	Ile	Ser	Glu	Ala	Lys	Ala	Asp	Lys	Ile	Leu	Ala	Glu	Ala	Ala	Lys	65	70	75	80
Leu	Val	Pro	Met	Gly	Phe	Thr	Thr	Ala	Thr	Glu	Phe	His	Gln	Arg	Arg	85	90	95	
Ser	Glu	Ile	Ile	Gln	Ile	Thr	Thr	Gly	Ser	Lys	Glu	Leu	Asp	Lys	Leu	100	105	110	
Leu	Gln	Gly	Gly	Ile	Glu	Thr	Gly	Ser	Ile	Thr	Glu	Met	Phe	Gly	Glu	115	120	125	
Phe	Arg	Thr	Gly	Lys	Thr	Gln	Ile	Cys	His	Thr	Leu	Ala	Val	Thr	Cys	130	135	140	
Gln	Leu	Pro	Ile	Asp	Arg	Gly	Gly	Gly	Glu	Gly	Lys	Ala	Met	Tyr	Ile	145	150	155	160
Asp	Thr	Glu	Gly	Thr	Phe	Arg	Pro	Glu	Arg	Leu	Leu	Ala	Val	Ala	Glu	165	170	175	
Arg	Tyr	Gly	Leu	Ser	Gly	Ser	Asp	Val	Leu	Asp	Asn	Val	Ala	Tyr	Ala	180	185	190	
Arg	Ala	Phe	Asn	Thr	Asp	His	Gln	Thr	Gln	Leu	Leu	Tyr	Gln	Ala	Ser	195	200	205	
Ala	Met	Met	Val	Glu	Ser	Arg	Tyr	Ala	Leu	Leu	Ile	Val	Asp	Ser	Ala	210	215	220	
Thr	Ala	Leu	Tyr	Arg	Thr	Asp	Tyr	Ser	Gly	Arg	Gly	Glu	Leu	Ser	Ala	225	230	235	240

Arg Gln Met His Leu Ala Arg Phe Leu Arg Met Leu Leu Arg Leu Ala  
245 250 255

Asp Glu Phe Gly Val Ala Val Val Ile Thr Asn Gln Val Val Ala Gln  
260 265 270

Val Asp Gly Ala Ala Met Phe Ala Ala Asp Pro Lys Lys Pro Ile Gly  
275 280 285

Gly Asn Ile Ile Ala His Ala Ser Thr Thr Arg Leu Tyr Leu Arg Lys  
290 295 300

Gly Arg Gly Glu Thr Arg Ile Cys Lys Ile Tyr Asp Ser Pro Cys Leu  
305 310 315 320

Pro Glu Ala Glu Ala Met Phe Ala Ile Asn Ala Asp Gly Val Gly Asp  
325 330 335

Ala Lys Asp

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Ala Leu Phe Asn Arg Val Cys Thr Ser Tyr Cys Glu Glu Gly Val Glu  
20 25 30

Ser Ala Ala Leu Leu Gly Cys Asp Asn Ser Ser Ser Thr Gly Asn Thr  
35 40 45

Ser Phe Ser Ser Leu Leu Arg Asp Tyr Pro Leu His Leu Phe His Met  
50 55 60

Lys Thr Pro Phe Pro Leu Ser Phe Ile Glu Cys Pro Ser Lys Ser Glu  
65 70 75 80

Leu Thr Ser Leu Gly Ile Ile Leu Tyr Phe Leu Asp Asp Met Glu Asp  
85 90 95

Glu Ile Phe Arg His Tyr Ala Glu Leu Arg Pro Gln Asn Phe Pro Cys  
 100 105 110

Ser Val Arg Arg Asn Asn Ser Ala Phe Met Thr Ser Ser Asp Phe Ala  
 115 120 125

Glu Arg Ala Ala Gly Val Tyr His Arg Glu Ala Arg Ser Gly Lys Tyr  
 130 135 140

Lys Leu Thr Tyr Ala Glu Ala Lys Ala Val Cys Glu Phe Glu Gly Gly  
 145 150 155 160

His Leu Ala Thr Tyr Lys Gln Leu Glu Ala Ala Arg Lys Ile Gly Phe  
 165 170 175

His Val Cys Ala Ala Gly Trp Met Ala Lys Gly Arg Val Gly Tyr Pro  
 180 185 190

Ile Val Lys Pro Gly Pro Asn Cys Gly Phe Gly Lys Thr Gly Ile Ile  
 195 200 205

Asp Tyr Gly Ile Arg Leu Asn Arg Ser Glu Arg Trp Asp Ala Tyr Cys  
 210 215 220

Tyr Asn Pro His Ala Lys Glu Cys Gly Gly Val Phe Thr Asp Pro Lys  
 225 230 235 240

Gln Ile Phe Lys Ser Pro Gly Phe Pro Asn Glu Tyr Glu Asp Asn Gln  
 245 250 255

Ile Cys Tyr Trp His Ile Arg Leu Lys Tyr Gly Gln Arg Ile His Leu  
 260 265 270

Ser Phe Leu Asp Phe Asp Leu Glu Asp Asp Pro Gly Cys Leu Ala Asp  
 275 280 285

Tyr Val Glu Ile Tyr Asp Ser Tyr Asp Asp Val His Gly Phe Val Gly  
 290 295 300

Arg Tyr Cys Gly Asp Glu Leu Pro Asp Asp Ile Ile Ser Thr Gly Asn  
 305 310 315 320

Val Met Thr Leu Lys Phe Leu Ser Asp Ala Ser Val Thr Ala Gly Gly  
 325 330 335

Phe Gln Ile Lys Tyr Val Ala Met Asp Pro Val Ser Lys Ser Ser Gln  
                   340                                  345                                  350

Gly Lys Asn Thr Lys Val Arg Met Gln Arg Asp Leu Val Asp Thr Ala  
                   355                                  360                                  365

Gln Arg Ser Ala Pro Gly Pro Ser Ala Arg Arg Arg Val Ala Asp Met  
           370                                  375                                  380

Thr Ala Arg Gly Gln Ser Pro Leu Ala Pro Leu Leu Glu Thr Leu Glu  
 385                                  390                                  395                                  400

Asp Pro Ser Ala Ser His Gly Gly Gln Thr Asp Ala Tyr Leu Thr Leu  
                   405                                  410                                  415

Thr Ser Arg Met Thr Gly Glu Glu Gly Lys Glu Val Ile Thr Glu Ile  
                   420                                  425                                  430

Glu Lys Lys Leu Pro Arg Leu Tyr Lys Val Leu Lys Val Ser Ser Ile  
                   435                                  440                                  445

Ile Asp Ser Leu Glu Ile Leu Phe Asn Lys Gly Glu Thr His Ser Ala  
           450                                  455                                  460

Val Val Asp Phe Glu Ala Leu Asn Val Ile Val Arg Leu Ile Glu Gln  
 465                                  470                                  475                                  480

Ala Pro Ile Gln Met Gly Glu Glu Ala Val Arg Trp Ala Lys Leu Val  
                   485                                  490                                  495

Ile Pro Leu Val Val His Ser Ala Gln Lys Val His Leu Arg Gly Ala  
           500                                  505                                  510

Thr Ala Leu Glu Met Gly Met Pro Leu Leu Leu Gln Lys Gln Gln Glu  
           515                                  520                                  525

Ile Ala Ser Ile Thr Glu Gln Leu Met Thr Thr Thr Leu His Arg Ser  
           530                                  535                                  540

Gly Ser Phe Ile Asn Ser Leu Leu Gln Leu Glu Glu Leu Gly Phe Arg  
 545                                  550                                  555                                  560

Ser Gly Ala Pro Met Ile Lys Lys Ile Ala Phe Ile Ala Trp Lys Ser

565	570	575
Leu Ile Asp Asn Phe Ala Leu Asn Pro Asp Ile Leu Cys Ser Ala Lys 580 585 590		
Arg Leu Lys Leu Leu Met Gln Pro Leu Ser Ser Ile His Val Arg Thr 595 600 605		
Glu Thr Leu Ala Leu Thr Lys Leu Glu Val Trp Trp Tyr Leu Leu Met 610 615 620		
Arg Leu Gly Pro His Leu Pro Ala Asn Phe Glu Gln Val Cys Val Pro 625 630 635 640		
Leu Ile Gln Ser Thr Ile Ser Ile Asp Ser Asn Ala Ser Pro Gln Gly 645 650 655		
Asn Ser Cys His Val Ala Thr Ser Pro Gly Leu Asn Pro Met Thr Pro 660 665 670		
Val His Lys Gly Ala Ser Ser Pro Tyr Gly Ala Pro Gly Thr Pro Arg 675 680 685		
Met Asn Leu Ser Ser Asn Leu Gly Gly Met Ala Thr Ile Pro Ser Ile 690 695 700		
Gln Leu Leu Gly Leu Glu Met Leu Leu His Phe Leu Leu Gly Pro Glu 705 710 715 720		
Ala Leu Ser Phe Ala Lys Gln Asn Lys Leu Val Leu Ser Leu Glu Pro 725 730 735		
Leu Glu His Pro Leu Ile Ser Ser Pro Ser Phe Phe Ser Lys His Ala 740 745 750		
Asn Thr Leu Ile Thr Ala Val His Asp Ser Phe Val Ala Val Gly Lys 755 760 765		
Asp Ala Pro Gly Asn Lys Lys Glu Lys Pro Gly Ser Glu Val Leu Thr 770 775 780		
Leu Leu Leu Lys Ser Leu Glu Ser Ile Val Lys Ser Glu Val Phe Pro 785 790 795 800		

Val Ser Lys Thr Leu Gly Thr Pro Ala Leu Phe Leu Ile Gln Leu Ile  
 805 810 815

Phe Asn Asn Phe Leu Glu Cys Gly Val Ser Asp Glu Arg Phe Phe Leu  
 820 825 830

Ser Leu Glu Ser Leu Val Gly Cys Val Leu Ser Gly Pro Thr Ser Pro  
 835 840 845

Leu Ala Phe Ser Asp Ser Val Leu Asn Val Ile Asn Gln Asn Ala Lys  
 850 855 860

Gln Leu Glu Asn Lys Glu His Leu Trp Lys Met Trp Ser Val Ile Val  
 865 870 875 880

Thr Pro Leu Thr Glu Leu Ile Asn Gln Thr Asn Glu Val Asn Gln Gly  
 885 890 895

Asp Ala Leu Glu His Asn Phe Ser Ala Ile Tyr Gly Ala Leu Thr Leu  
 900 905 910

Pro Val Asn His Ile Phe Ser Glu Gln Arg Phe Pro Val Ala Thr Met  
 915 920 925

Lys Thr Leu Leu Arg Thr Trp Ser Glu Leu Tyr Arg Ala Phe Ala Arg  
 930 935 940

Cys Ala Ala Leu Val Ala Thr Ala Glu Glu Asn Leu Cys Cys Glu Glu  
 945 950 955 960

Leu Ser Ser Lys Ile Met Ser Ser Leu Glu Asp Glu Gly Phe Ser Asn  
 965 970 975

Leu Leu Phe Val Asp Arg Ile Ile Tyr Ile Ile Thr Val Met Val Asp  
 980 985 990

Cys Ile Asp Phe Ser Pro Tyr Asn Ile Lys Tyr Gln Pro Lys Val Lys  
 995 1000 1005

Ser Pro Gln Arg Pro Ser Asp Trp Ser Lys Lys Lys Asn Glu Pro  
 1010 1015 1020

Leu Gly Lys Leu Thr Ser Leu Phe Lys Leu Ile Val Lys Val Ile  
 1025 1030 1035

Tyr	Ser	Phe	His	Thr	Leu	Ser	Phe	Lys	Glu	Ala	His	Ser	Asp	Thr
1040						1045					1050			
Leu	Phe	Thr	Ile	Gly	Asn	Ser	Ile	Thr	Gly	Ile	Ile	Ser	Ser	Val
1055						1060					1065			
Leu	Gly	His	Ile	Ser	Leu	Pro	Ser	Met	Ile	Arg	Lys	Ile	Phe	Ala
1070						1075					1080			
Thr	Leu	Thr	Arg	Pro	Leu	Ala	Leu	Phe	Tyr	Glu	Asn	Ser	Lys	Leu
1085						1090					1095			
Asp	Glu	Val	Pro	Lys	Val	Tyr	Ser	Cys	Leu	Asn	Asn	Lys	Leu	Glu
1100						1105					1110			
Lys	Leu	Leu	Gly	Glu	Ile	Ile	Ala	Cys	Leu	Gln	Phe	Ser	Tyr	Thr
1115						1120					1125			
Gly	Thr	Tyr	Asp	Ser	Glu	Leu	Leu	Glu	Gln	Leu	Ser	Pro	Leu	Leu
1130						1135					1140			
Cys	Ile	Ile	Phe	Leu	His	Lys	Asn	Lys	Gln	Ile	Arg	Lys	Gln	Ser
1145						1150					1155			
Ala	Gln	Phe	Trp	Asn	Ala	Thr	Phe	Ala	Lys	Val	Met	Met	Leu	Val
1160						1165					1170			
Tyr	Pro	Glu	Glu	Leu	Lys	Pro	Val	Leu	Thr	Gln	Ala	Lys	Gln	Lys
1175						1180					1185			
Phe	Leu	Leu	Leu	Leu	Pro	Gly	Leu	Glu	Thr	Val	Glu	Met	Met	Glu
1190						1195					1200			
Glu	Ser	Ser	Gly	Pro	Tyr	Ser	Asp	Gly	Leu	Lys	Leu	Glu	Ser	Ser
1205						1210					1215			
Ser	Leu	Lys	Val	Lys	Gly	Glu	Ile	Leu	Leu	Glu	Glu	Glu	Lys	Ser
1220						1225					1230			
Thr	Asp	Phe	Val	Phe	Ile	Pro	Pro	Glu	Gly	Lys	Asp	Ala	Lys	Glu
1235						1240					1245			
Arg	Ile	Leu	Thr	Asp	His	Gln	Lys	Glu	Val	Leu	Lys	Thr	Lys	Arg
1250						1255					1260			

Phe	Glu	Glu	Gln	Met	Asp	Ser	Asp	Ile	Val	Ile	Pro	Gln	Asp	Val
1265						1270					1275			
Thr	Glu	Asp	Cys	Gly	Met	Ala	Glu	His	Leu	Glu	Lys	Ser	Ser	Leu
1280						1285					1290			
Ser	Asn	Asn	Glu	Cys	Gly	Ser	Leu	Asp	Lys	Thr	Ser	Pro	Glu	Met
1295						1300					1305			
Ser	Asn	Ser	Asn	Asn	Asp	Glu	Arg	Lys	Lys	Ala	Leu	Ile	Ser	Ser
1310						1315					1320			
Arg	Lys	Thr	Ser	Thr	Glu	Cys	Ala	Ser	Ser	Thr	Glu	Asn	Ser	Phe
1325						1330					1335			
Val	Val	Ser	Ser	Ser	Ser	Val	Ser	Asn	Thr	Thr	Val	Ala	Gly	Thr
1340						1345					1350			
Pro	Pro	Tyr	Pro	Thr	Ser	Arg	Arg	Gln	Thr	Phe	Ile	Thr	Leu	Glu
1355						1360					1365			
Lys	Phe	Asp	Gly	Ser	Glu	Asn	Arg	Pro	Phe	Ser	Pro	Ser	Pro	Leu
1370						1375					1380			
Asn	Asn	Ile	Ser	Ser	Thr	Val	Thr	Val	Lys	Asn	Asn	Gln	Glu	Thr
1385						1390					1395			
Met	Ile	Lys	Thr	Asp	Phe	Leu	Pro	Lys	Ala	Lys	Gln	Arg	Glu	Gly
1400						1405					1410			
Thr	Phe	Ser	Lys	Ser	Asp	Ser	Glu	Lys	Ile	Val	Asn	Gly	Thr	Lys
1415						1420					1425			
Arg	Ser	Ser	Arg	Arg	Ala	Gly	Lys	Ala	Glu	Gln	Thr	Gly	Asn	Lys
1430						1435					1440			
Arg	Ser	Lys	Pro	Leu	Met	Arg	Ser	Glu	Pro	Glu	Lys	Asn	Thr	Glu
1445						1450					1455			
Glu	Ser	Val	Glu	Gly	Ile	Val	Val	Leu	Glu	Asn	Asn	Pro	Pro	Gly
1460						1465					1470			
Leu	Leu	Asn	Gln	Thr	Glu	Cys	Val	Ser	Asp	Asn	Gln	Val	His	Leu



1475		1480		1485
Ser Glu 1490	Ser Thr Met Glu	His 1495	Asp Asn Thr Lys	Leu 1500
Thr Val 1505	Glu Asn Ala Val	Leu 1510	Leu Glu Thr Asn	Thr 1515
Lys Asn 1520	Val Glu Ile Asn	Leu 1525	Glu Ser Lys Glu	Asn 1530
Val Val 1535	Ile Ser Ala Asp	Gln 1540	Met Val Asn Glu	Asp 1545
Gln Ile 1550	Thr Pro Asn Gln	Lys 1555	Thr Leu Arg Arg	Ser 1560
Arg Ser 1565	Glu Val Val Glu	Ser 1570	Thr Thr Glu Ser	Gln 1575
Asn Ser 1580	His Gln Lys Lys	Glu 1585	Arg Arg Lys Glu	Glu 1590
Leu Gln 1595	Lys Ser Pro Leu	His 1600	Ile Lys Asp Asp	Val 1605
Gln Lys 1610	Leu Ile Ala Glu	Gln 1615	Thr Leu Gln Glu	Asn 1620
Lys Gly 1625	Ser Asn Leu His	Glu 1630	Lys Thr Leu Gly	Glu 1635
Asn Ala 1640	Glu Thr Glu Gln	Asn 1645	Lys Lys Lys Ala	Asp 1650
Ile Lys 1655	Ser Glu Gly Asp	Gly 1660	Thr Gln Asp Ile	Val 1665
Ser Glu 1670	Lys Leu Val Arg	Gly 1675	Arg Thr Arg Tyr	Gln 1680
Ala Ser 1685	Gln Gly Leu Leu	Ser 1690	Ser Ile Glu Asn	Ser 1695

Ser	Ser	Glu	Ala	Lys	Glu	Glu	Gly	Ser	Arg	Lys	Lys	Arg	Ser	Gly
1700						1705					1710			
Lys	Trp	Lys	Asn	Lys	Ser	Asn	Glu	Ser	Val	Asp	Ile	Gln	Asp	Gln
1715						1720					1725			
Glu	Glu	Lys	Val	Val	Lys	Gln	Glu	Cys	Ile	Lys	Ala	Glu	Asn	Gln
1730						1735					1740			
Ser	His	Asp	Tyr	Lys	Ala	Thr	Ser	Glu	Glu	Asp	Val	Ser	Ile	Lys
1745						1750					1755			
Ser	Pro	Ile	Cys	Glu	Lys	Gln	Asp	Glu	Ser	Asn	Thr	Val	Ile	Cys
1760						1765					1770			
Gln	Asp	Ser	Thr	Val	Thr	Ser	Asp	Leu	Leu	Gln	Val	Pro	Asp	Asp
1775						1780					1785			
Leu	Pro	Asn	Val	Cys	Glu	Glu	Lys	Asn	Glu	Thr	Ser	Lys	Tyr	Ala
1790						1795					1800			
Glu	Tyr	Ser	Phe	Thr	Ser	Leu	Pro	Val	Pro	Glu	Ser	Asn	Leu	Arg
1805						1810					1815			
Thr	Arg	Asn	Ala	Ile	Lys	Arg	Leu	His	Lys	Arg	Asp	Ser	Phe	Asp
1820						1825					1830			
Asn	Cys	Ser	Leu	Gly	Glu	Ser	Ser	Lys	Ile	Gly	Ile	Ser	Asp	Ile
1835						1840					1845			
Ser	Ser	Leu	Ser	Glu	Lys	Thr	Phe	Gln	Thr	Leu	Glu	Cys	Gln	His
1850						1855					1860			
Lys	Arg	Ser	Arg	Arg	Val	Arg	Arg	Ser	Lys	Gly	Cys	Asp	Cys	Cys
1865						1870					1875			
Gly	Glu	Lys	Ser	Gln	Pro	Gln	Glu	Lys	Ser	Leu	Ile	Gly	Leu	Lys
1880						1885					1890			
Asn	Thr	Glu	Asn	Asn	Asp	Val	Glu	Ile	Ser	Glu	Thr	Lys	Lys	Ala
1895						1900					1905			
Asp	Val	Gln	Ala	Pro	Val	Ser	Pro	Ser	Glu	Thr	Ser	Gln	Ala	Asn
1910						1915					1920			

Pro	Tyr	Ser	Glu	Gly	Gln	Phe	Leu	Asp	Glu	His	His	Ser	Val	Asn
1925						1930					1935			
Phe	His	Leu	Gly	Leu	Lys	Glu	Asp	Asn	Asp	Thr	Ile	Asn	Asp	Ser
1940						1945					1950			
Leu	Ile	Val	Ser	Glu	Thr	Lys	Ser	Lys	Glu	Asn	Thr	Met	Gln	Glu
1955						1960					1965			
Ser	Leu	Pro	Ser	Gly	Ile	Val	Asn	Phe	Arg	Glu	Glu	Ile	Cys	Asp
1970						1975					1980			
Met	Asp	Ser	Ser	Glu	Ala	Met	Ser	Leu	Glu	Ser	Gln	Glu	Ser	Pro
1985						1990					1995			
Asn	Glu	Asn	Phe	Lys	Thr	Val	Gly	Pro	Cys	Leu	Gly	Asp	Ser	Lys
2000						2005					2010			
Asn	Val	Ser	Gln	Glu	Ser	Leu	Glu	Thr	Lys	Glu	Glu	Lys	Pro	Glu
2015						2020					2025			
Glu	Thr	Pro	Lys	Met	Glu	Leu	Ser	Leu	Glu	Asn	Val	Thr	Val	Glu
2030						2035					2040			
Gly	Asn	Ala	Cys	Lys	Val	Thr	Glu	Ser	Asn	Leu	Glu	Lys	Ala	Lys
2045						2050					2055			
Thr	Met	Glu	Leu	Asn	Val	Gly	Asn	Glu	Ala	Ser	Phe	His	Gly	Gln
2060						2065					2070			
Glu	Arg	Thr	Lys	Thr	Gly	Ile	Ser	Glu	Glu	Ala	Ala	Ile	Glu	Glu
2075						2080					2085			
Asn	Lys	Arg	Asn	Asp	Asp	Ser	Glu	Ala	Asp	Thr	Ala	Lys	Leu	Asn
2090						2095					2100			
Ala	Lys	Glu	Val	Ala	Thr	Glu	Glu	Phe	Asn	Ser	Asp	Ile	Ser	Leu
2105						2110					2115			
Ser	Asp	Asn	Thr	Thr	Pro	Val	Lys	Leu	Asn	Ala	Gln	Thr	Glu	Ile
2120						2125					2130			
Ser	Glu	Gln	Thr	Ala	Ala	Gly	Glu	Leu	Asp	Gly	Gly	Asn	Asp	Val
2135						2140					2145			

Ser	Asp	Leu	His	Ser	Ser	Glu	Glu	Thr	Asn	Thr	Lys	Met	Lys	Asn
2150						2155					2160			
Asn	Glu	Glu	Met	Met	Ile	Gly	Glu	Ala	Met	Ala	Glu	Thr	Gly	His
2165						2170					2175			
Asp	Gly	Glu	Thr	Glu	Asn	Glu	Gly	Ile	Thr	Thr	Lys	Thr	Ser	Lys
2180						2185					2190			
Pro	Asp	Glu	Ala	Glu	Thr	Asn	Met	Leu	Thr	Ala	Glu	Met	Asp	Asn
2195						2200					2205			
Phe	Val	Cys	Asp	Thr	Val	Glu	Met	Ser	Thr	Glu	Glu	Gly	Ile	Ile
2210						2215					2220			
Asp	Ala	Asn	Lys	Thr	Glu	Thr	Asn	Thr	Glu	Tyr	Ser	Lys	Ser	Glu
2225						2230					2235			
Glu	Lys	Leu	Asp	Asn	Asn	Gln	Met	Val	Met	Glu	Ser	Asp	Ile	Leu
2240						2245					2250			
Gln	Glu	Asp	His	His	Thr	Ser	Gln	Lys	Val	Glu	Glu	Pro	Ser	Gln
2255						2260					2265			
Cys	Leu	Ala	Ser	Gly	Thr	Ala	Ile	Ser	Glu	Leu	Ile	Ile	Glu	Asp
2270						2275					2280			
Asn	Asn	Ala	Ser	Pro	Gln	Lys	Leu	Arg	Glu	Leu	Asp	Pro	Ser	Leu
2285						2290					2295			
Val	Ser	Ala	Asn	Asp	Ser	Pro	Ser	Gly	Met	Gln	Thr	Arg	Cys	Val
2300						2305					2310			
Trp	Ser	Pro	Leu	Ala	Ser	Pro	Ser	Thr	Ser	Ile	Leu	Lys	Arg	Gly
2315						2320					2325			
Leu	Lys	Arg	Ser	Gln	Glu	Asp	Glu	Ile	Ser	Ser	Pro	Val	Asn	Lys
2330						2335					2340			
Val	Arg	Arg	Val	Ser	Phe	Ala	Asp	Pro	Ile	Tyr	Gln	Ala	Gly	Leu
2345						2350					2355			
Ala	Asp	Asp	Ile	Asp	Arg	Arg	Cys	Ser	Ile	Val	Arg	Ser	His	Ser

2360		2365		2370
Ser Asn Ser Ser Pro Ile Gly Lys Ser Val Lys Thr Ser Pro Thr	2375	2380		2385
Thr Gln Ser Lys Ser Val Asp Leu Cys Val Thr Ala Ser Glu Ile	2390	2395		2400
Tyr Ser Lys Ile Ser Glu Met Ala Lys Glu Ser Ile Pro Cys Pro	2405	2410		2415
Thr Glu Ser Val Tyr Pro Pro Leu Val Asn Cys Val Ala Pro Val	2420	2425		2430
Asp Ile Ile Leu Pro Gln Ile Thr Ser Asn Met Trp Ala Arg Gly	2435	2440		2445
Leu Gly Gln Leu Ile Arg Ala Lys Asn Ile Lys Thr Ile Gly Asp	2450	2455		2460
Leu Ser Thr Leu Thr Ala Ser Glu Ile Lys Thr Leu Pro Ile Arg	2465	2470		2475
Ser Pro Lys Val Ser Asn Val Lys Lys Ala Leu Arg Ile Tyr His	2480	2485		2490
Glu Gln Gln Val Lys Thr Arg Gly Leu Glu Glu Ile Pro Val Phe	2495	2500		2505
Asp Ile Ser Glu Lys Thr Val Asn Gly Ile Glu Asn Lys Ser Leu	2510	2515		2520
Ser Pro Asp Glu Glu Arg Leu Val Ser Asp Ile Ile Asp Pro Val	2525	2530		2535
Ala Leu Glu Ile Pro Leu Ser Lys Asn Leu Leu Ala Gln Ile Ser	2540	2545		2550
Ala Leu Ala Leu Gln Leu Asp Ser Glu Asp Leu His Asn Tyr Ser	2555	2560		2565
Gly Ser Gln Leu Phe Glu Met His Glu Lys Leu Ser Ser Glu Gly	2570	2575		2580

Ile Phe Leu Ala Thr Val Cys Gln Phe Ile Ile Val Asp Lys Ala  
 2585 2590 2595

Glu Phe Thr Gly Gln Gln Ala Tyr Met Leu Ile Glu Val Asp Ala  
 2600 2605 2610

Leu Arg Ser Asp Glu Leu Lys Arg Met Glu Lys Ala Asp  
 2615 2620 2625

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Met Asp Glu Pro Pro Gly Lys Pro Leu Ser Cys Glu Glu Lys Glu Lys  
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Leu Lys Glu Lys Leu Ala Phe Leu Lys Arg Glu Tyr Ser Lys Thr Leu  
 20 25 30

Ala Arg Leu Gln Arg Ala Gln Arg Ala Glu Lys Ile Lys His Ser Ile  
 35 40 45

Lys Lys Thr Val Glu Glu Gln Asp Cys Leu Ser Gln Gln Asp Leu Ser  
 50 55 60

Pro Gln Leu Lys His Ser Glu Pro Lys Asn Lys Ile Cys Val Tyr Asp  
 65 70 75 80

Lys Leu His Ile Lys Thr His Leu Asp Glu Glu Thr Gly Glu Lys Thr  
 85 90 95

Ser Ile Thr Leu Asp Val Gly Pro Glu Ser Phe Asn Pro Gly Asp Gly  
 100 105 110

Pro Gly Gly Leu Pro Ile Gln Arg Thr Asp Asp Thr Gln Glu His Phe  
 115 120 125

Pro His Arg Val Ser Asp Pro Ser Gly Glu Gln Lys Gln Lys Leu Pro  
 130 135 140

Ser Arg Arg Lys Lys Gln Gln Lys Arg Thr Phe Ile Ser Gln Glu Arg  
 145 150 155 160

Asp Cys Val Phe Gly Thr Asp Ser Leu Arg Leu Ser Gly Lys Arg Leu  
 165 170 175

Lys Glu Gln Glu Glu Ile Ser Ser Lys Asn Pro Ala Arg Ser Pro Val  
 180 185 190

Thr Glu Ile Arg Thr His Leu Leu Ser Leu Lys Ser Glu Leu Pro Asp  
 195 200 205

Ser Pro Glu Pro Val Thr Glu Ile Asn Glu Asp Ser Val Leu Ile Pro  
 210 215 220

Pro Thr Ala Gln Pro Glu Lys Gly Val Asp Thr Phe Leu Arg Arg Pro  
 225 230 235 240

Asn Phe Thr Arg Ala Thr Thr Val Pro Leu Gln Thr Leu Ser Asp Ser  
 245 250 255

Gly Ser Ser Gln His Leu Glu His Ile Pro Pro Lys Gly Ser Ser Glu  
 260 265 270

Leu Thr Thr His Asp Leu Lys Asn Ile Arg Phe Thr Ser Pro Val Ser  
 275 280 285

Leu Glu Ala Gln Gly Lys Lys Met Thr Val Ser Thr Asp Asn Leu Leu  
 290 295 300

Val Asn Lys Ala Ile Ser Lys Ser Gly Gln Leu Pro Thr Ser Ser Asn  
 305 310 315 320

Leu Glu Ala Asn Ile Ser Cys Ser Leu Asn Glu Leu Thr Tyr Asn Asn  
 325 330 335

Leu Pro Ala Asn Glu Asn Gln Asn Leu Lys Glu Gln Asn Gln Thr Glu  
 340 345 350

Lys Ser Leu Lys Ser Pro Ser Asp Thr Leu Asp Gly Arg Asn Glu Asn  
 355 360 365

Leu Gln Glu Ser Glu Ile Leu Ser Gln Pro Lys Ser Leu Ser Leu Glu  
 370 375 380

Ala Thr Ser Pro Leu Ser Ala Glu Lys His Ser Cys Thr Val Pro Glu  
 385 390 395 400

Gly Leu Leu Phe Pro Ala Glu Tyr Tyr Val Arg Thr Thr Arg Ser Met  
 405 410 415

Ser Asn Cys Gln Arg Lys Val Ala Val Glu Ala Val Ile Gln Ser His  
 420 425 430

Leu Asp Val Lys Lys Lys Gly Phe Lys Asn Lys Asn Lys Asp Ala Ser  
 435 440 445

Lys Asn Leu Asn Leu Ser Asn Glu Glu Thr Asp Gln Ser Glu Ile Arg  
 450 455 460

Met Ser Gly Thr Cys Thr Gly Gln Pro Ser Ser Arg Thr Ser Gln Lys  
 465 470 475 480

Leu Leu Ser Leu Thr Lys Val Ser Ser Pro Ala Gly Pro Thr Glu Asp  
 485 490 495

Asn Asp Leu Ser Arg Lys Ala Val Ala Gln Ala Pro Gly Arg Arg Tyr  
 500 505 510

Thr Gly Lys Arg Lys Ser Ala Cys Thr Pro Ala Ser Asp His Cys Glu  
 515 520 525

Pro Leu Leu Pro Thr Ser Ser Leu Ser Ile Val Asn Arg Ser Lys Glu  
 530 535 540

Glu Val Thr Ser His Lys Tyr Gln His Glu Lys Leu Phe Ile Gln Val  
 545 550 555 560

Lys Gly Lys Lys Ser Arg His Gln Lys Glu Asp Ser Leu Ser Trp Ser  
 565 570 575

Asn Ser Ala Tyr Leu Ser Leu Asp Asp Asp Ala Phe Thr Ala Pro Phe  
 580 585 590

His Arg Asp Gly Met Leu Ser Leu Lys Gln Leu Leu Ser Phe Leu Ser  
 595 600 605

Ile Thr Asp Phe Gln Leu Pro Asp Glu Asp Phe Gly Pro Leu Lys Leu  
 610 615 620

Glu Lys Val Lys Ser Cys Ser Glu Lys Pro Val Glu Pro Phe Glu Ser  
 625 630 635 640



Lys Met Phe Gly Glu Arg His Leu Lys Glu Gly Ser Cys Ile Phe Pro  
                                 645                                650                                655

Glu Glu Leu Ser Pro Lys Arg Met Asp Thr Glu Met Glu Asp Leu Glu  
                                 660                                665                                670

Glu Asp Leu Ile Val Leu Pro Gly Lys Ser His Pro Lys Arg Pro Asn  
                                 675                                680                                685

Ser Gln Ser Gln His Thr Lys Thr Gly Leu Ser Ser Ser Ile Leu Leu  
                                 690                                695                                700

Tyr Thr Pro Leu Asn Thr Val Ala Pro Asp Asp Asn Asp Arg Pro Thr  
                                 705                                710                                715                                720

Thr Asp Met Cys Ser Pro Ala Phe Pro Ile Leu Gly Thr Thr Pro Ala  
                                 725                                730                                735

Phe Gly Pro Gln Gly Ser Tyr Glu Lys Ala Ser Thr Glu Val Ala Gly  
                                 740                                745                                750

Arg Thr Cys Cys Thr Pro Gln Leu Ala His Leu Lys Asp Ser Val Cys  
                                 755                                760                                765

Leu Ala Ser Asp Thr Lys Gln Phe Asp Ser Ser Gly Ser Pro Ala Lys  
                                 770                                775                                780

Pro His Thr Thr Leu Gln Val Ser Gly Arg Gln Gly Gln Pro Thr Cys  
                                 785                                790                                795                                800

Asp Cys Asp Ser Val Pro Pro Gly Thr Pro Pro Pro Ile Glu Ser Phe  
                                 805                                810                                815

Thr Phe Lys Glu Asn Gln Leu Cys Arg Asn Thr Cys Gln Glu Leu His  
                                 820                                825                                830

Lys His Ser Val Glu Gln Thr Glu Thr Ala Glu Leu Pro Ala Ser Asp  
                                 835                                840                                845

Ser Ile Asn Pro Gly Asn Leu Gln Leu Val Ser Glu Leu Lys Asn Pro  
                                 850                                855                                860

Ser Gly Ser Cys Ser Val Asp Val Ser Ala Met Phe Trp Glu Arg Ala

865		870		875		880
Gly Cys Lys Glu Pro Cys Ile Ile Thr Ala Cys Glu Asp Val Val Ser						
		885		890		895
Leu Trp Lys Ala Leu Asp Ala Trp Gln Trp Glu Lys Leu Tyr Thr Trp						
		900		905		910
His Phe Ala Glu Val Pro Val Leu Gln Ile Val Pro Val Pro Asp Val						
		915		920		925
Tyr Asn Leu Val Cys Val Ala Leu Gly Asn Leu Glu Ile Arg Glu Ile						
		930		935		940
Arg Ala Leu Phe Cys Ser Ser Asp Asp Glu Ser Glu Lys Gln Val Leu						
		945		950		955
						960
Leu Lys Ser Gly Asn Ile Lys Ala Val Leu Gly Leu Thr Lys Arg Arg						
		965		970		975
Leu Val Ser Ser Ser Gly Thr Leu Ser Asp Gln Gln Val Glu Val Met						
		980		985		990
Thr Phe Ala Glu Asp Gly Gly Gly Lys Glu Asn Gln Phe Leu Met Pro						
		995		1000		1005
Pro Glu Glu Thr Ile Leu Thr Phe Ala Glu Val Gln Gly Met Gln						
		1010		1015		1020
Glu Ala Leu Leu Gly Thr Thr Ile Met Asn Asn Ile Val Ile Trp						
		1025		1030		1035
Asn Leu Lys Thr Gly Gln Leu Leu Lys Lys Met His Ile Asp Asp						
		1040		1045		1050
Ser Tyr Gln Ala Ser Val Cys His Lys Ala Tyr Ser Glu Met Gly						
		1055		1060		1065
Leu Leu Phe Ile Val Leu Ser His Pro Cys Ala Lys Glu Ser Glu						
		1070		1075		1080
Ser Leu Arg Ser Pro Val Phe Gln Leu Ile Val Ile Asn Pro Lys						
		1085		1090		1095

Thr Thr Leu Ser Val Gly Val Met Leu Tyr Cys Leu Pro Pro Gly  
 1100 1105 1110

Gln Ala Gly Arg Phe Leu Glu Gly Asp Val Lys Asp His Cys Ala  
 1115 1120 1125

Ala Ala Ile Leu Thr Ser Gly Thr Ile Ala Ile Trp Asp Leu Leu  
 1130 1135 1140

Leu Gly Gln Cys Thr Ala Leu Leu Pro Pro Val Ser Asp Gln His  
 1145 1150 1155

Trp Ser Phe Val Lys Trp Ser Gly Thr Asp Ser His Leu Leu Ala  
 1160 1165 1170

Gly Gln Lys Asp Gly Asn Ile Phe Val Tyr His Tyr Ser  
 1175 1180 1185

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Met Ala Pro Arg Leu Gln Leu Glu Lys Ala Ala Trp Arg Trp Ala Glu  
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Thr Val Arg Pro Glu Glu Val Ser Gln Glu His Ile Glu Thr Ala Tyr  
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Arg Ile Trp Leu Glu Pro Cys Ile Arg Gly Val Cys Arg Arg Asn Cys  
 35 40 45

Lys Gly Asn Pro Asn Cys Leu Val Gly Ile Gly Glu His Ile Trp Leu  
 50 55 60

Gly Glu Ile Asp Glu Asn Ser Phe His Asn Ile Asp Asp Pro Asn Cys  
 65 70 75 80

Glu Arg Arg Lys Lys Asn Ser Phe Val Gly Leu Thr Asn Leu Gly Ala  
 85 90 95

Thr Cys Tyr Val Asn Thr Phe Leu Gln Val Trp Phe Leu Asn Leu Glu  
 100 105 110

Leu Arg Gln Ala Leu Tyr Leu Cys Pro Ser Thr Cys Ser Asp Tyr Met  
 115 120 125

Leu Gly Asp Gly Ile Gln Glu Glu Lys Asp Tyr Glu Pro Gln Thr Ile  
 130 135 140

Cys Glu His Leu Gln Tyr Leu Phe Ala Leu Leu Gln Asn Ser Asn Arg  
 145 150 155 160

Arg Tyr Ile Asp Pro Ser Gly Phe Val Lys Ala Leu Gly Leu Asp Thr  
 165 170 175

Gly Gln Gln Gln Asp Ala Gln Glu Phe Ser Lys Leu Phe Met Ser Leu  
 180 185 190

Leu Glu Asp Thr Leu Ser Lys Gln Lys Asn Pro Asp Val Arg Asn Ile  
 195 200 205

Val Gln Gln Gln Phe Cys Gly Glu Tyr Ala Tyr Val Thr Val Cys Asn  
 210 215 220

Gln Cys Gly Arg Glu Ser Lys Leu Leu Ser Lys Phe Tyr Glu Leu Glu  
 225 230 235 240

Leu Asn Ile Gln Gly His Lys Gln Leu Thr Asp Cys Ile Ser Glu Phe  
 245 250 255

Leu Lys Glu Glu Lys Leu Glu Gly Asp Asn Arg Tyr Phe Cys Glu Asn  
 260 265 270

Cys Gln Ser Lys Gln Asn Ala Thr Arg Lys Ile Arg Leu Leu Ser Leu  
 275 280 285

Pro Cys Thr Leu Asn Leu Gln Leu Met Arg Phe Val Phe Asp Arg Gln  
 290 295 300

Thr Gly His Lys Lys Lys Leu Asn Thr Tyr Ile Gly Phe Ser Glu Ile  
 305 310 315 320

Leu Asp Met Glu Pro Tyr Val Glu His Lys Gly Gly Ser Tyr Val Tyr  
 325 330 335

Glu Leu Ser Ala Val Leu Ile His Arg Gly Val Ser Ala Tyr Ser Gly  
 340 345 350

His Tyr Ile Ala His Val Lys Asp Pro Gln Ser Gly Glu Trp Tyr Lys  
 355 360 365

Phe Asn Asp Glu Asp Ile Glu Lys Met Glu Gly Lys Lys Leu Gln Leu  
 370 375 380

Gly Ile Glu Glu Asp Leu Ala Glu Pro Ser Lys Ser Gln Thr Arg Lys  
 385 390 395 400

Pro Lys Cys Gly Lys Gly Thr His Cys Ser Arg Asn Ala Tyr Met Leu  
 405 410 415

Val Tyr Arg Leu Gln Thr Gln Glu Lys Pro Asn Thr Thr Val Gln Val  
 420 425 430

Pro Ala Phe Leu Gln Glu Leu Val Asp Arg Asp Asn Ser Lys Phe Glu  
 435 440 445

Glu Trp Cys Ile Glu Met Ala Glu Met Arg Lys Gln Ser Val Asp Lys  
 450 455 460

Gly Lys Ala Lys His Glu Glu Val Lys Glu Leu Tyr Gln Arg Leu Pro  
 465 470 475 480

Ala Gly Ala Glu Pro Tyr Glu Phe Val Ser Leu Glu Trp Leu Gln Lys  
 485 490 495

Trp Leu Asp Glu Ser Thr Pro Thr Lys Pro Ile Asp Asn His Ala Cys  
 500 505 510

Leu Cys Ser His Asp Lys Leu His Pro Asp Lys Ile Ser Ile Met Lys  
 515 520 525

Arg Ile Ser Glu Tyr Ala Ala Asp Ile Phe Tyr Ser Arg Tyr Gly Gly  
 530 535 540

Gly Pro Arg Leu Thr Val Lys Ala Leu Cys Lys Glu Cys Val Val Glu  
 545 550 555 560

Arg Cys Arg Ile Leu Arg Leu Lys Asn Gln Leu Asn Glu Asp Tyr Lys  
 565 570 575

Thr Val Asn Asn Leu Leu Lys Ala Ala Val Lys Gly Asp Gly Phe Trp  
 580 585 590

Val Gly Lys Ser Ser Leu Arg Ser Trp Arg Gln Leu Ala Leu Glu Gln  
 595 600 605

Leu Asp Glu Gln Asp Gly Asp Ala Glu Gln Ser Asn Gly Lys Met Asn  
 610 615 620

Gly Ser Thr Leu Asn Lys Asp Glu Ser Lys Glu Glu Arg Lys Glu Glu  
 625 630 635 640

Glu Glu Leu Asn Phe Asn Glu Asp Ile Leu Cys Pro His Gly Glu Leu  
 645 650 655

Cys Ile Ser Glu Asn Glu Arg Arg Leu Val Ser Lys Glu Ala Trp Ser  
 660 665 670

Lys Leu Gln Gln Tyr Phe Pro Lys Ala Pro Glu Phe Pro Ser Tyr Lys  
 675 680 685

Glu Cys Cys Ser Gln Cys Lys Ile Leu Glu Arg Glu Gly Glu Glu Asn  
 690 695 700

Glu Ala Leu His Lys Met Ile Ala Asn Glu Gln Lys Thr Ser Leu Pro  
 705 710 715 720

Asn Leu Phe Gln Asp Lys Asn Arg Pro Cys Leu Ser Asn Trp Pro Glu  
 725 730 735

Asp Thr Asp Val Leu Tyr Ile Val Ser Gln Phe Phe Val Glu Glu Trp  
 740 745 750

Arg Lys Phe Val Arg Lys Pro Thr Arg Cys Ser Pro Val Ser Ser Val  
 755 760 765

Gly Asn Ser Ala Leu Leu Cys Pro His Gly Gly Leu Met Phe Thr Phe  
 770 775 780

Ala Ser Met Thr Lys Glu Asp Ser Lys Leu Ile Ala Leu Ile Trp Pro  
 785 790 795 800

Ser Glu Trp Gln Met Ile Gln Lys Leu Phe Val Val Asp His Val Ile  
 805 810 815

Lys Ile Thr Arg Ile Glu Val Gly Asp Val Asn Pro Ser Glu Thr Gln

820	825	830
Tyr Ile Ser Glu Pro Lys Leu Cys Pro Glu Cys Arg Glu Gly Leu Leu		
835	840	845
Cys Gln Gln Gln Arg Asp Leu Arg Glu Tyr Thr Gln Ala Thr Ile Tyr		
850	855	860
Val His Lys Val Val Asp Asn Lys Lys Val Met Lys Asp Ser Ala Pro		
865	870	880
Glu Leu Asn Val Ser Ser Ser Glu Thr Glu Glu Asp Lys Glu Glu Ala		
	885	890 895
Lys Pro Asp Gly Glu Lys Asp Pro Asp Phe Asn Gln Ile Met His Ala		
	900	905 910
Phe Ser Val Ala Pro Phe Asp Gln Asn Leu Ser Ile Asp Gly Lys Ile		
	915	920 925
Leu Ser Asp Asp Cys Ala Thr Leu Gly Thr Leu Gly Val Ile Pro Glu		
	930	935 940
Ser Val Ile Leu Leu Lys Ala Asp Glu Pro Ile Ala Asp Tyr Ala Ala		
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Met Asp Asp Val Met Gln Val Cys Met Pro Glu Glu Gly Phe Lys Gly		
	965	970 975
Thr Gly Leu Leu Gly His		
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<212> PRT		
<213> Homo sapiens		
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Met Asp Leu Ser Ala Leu Arg Val Glu Glu Val Gln Asn Val Ile Asn		
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Ala Met Gln Lys Ile Leu Glu Cys Pro Ile Cys Leu Glu Leu Ile Lys		
	20	25 30
Glu Pro Val Ser Thr Lys Cys Asp His Ile Phe Cys Lys Phe Cys Met		

35

40

45

Leu Lys Leu Leu Asn Gln Lys Lys Gly Pro Ser Gln Cys Pro Leu Cys  
 50 55 60

Lys Asn Asp Ile Thr Lys Arg Ser Leu Gln Glu Ser Thr Arg Phe Ser  
 65 70 75 80

Gln Leu Val Glu Glu Leu Leu Lys Ile Ile Cys Ala Phe Gln Leu Asp  
 85 90 95

Thr Gly Leu Glu Tyr Ala Asn Ser Tyr Asn Phe Ala Lys Lys Glu Asn  
 100 105 110

Asn Ser Pro Glu His Leu Lys Asp Glu Val Ser Ile Ile Gln Ser Met  
 115 120 125

Gly Tyr Arg Asn Arg Ala Lys Arg Leu Leu Gln Ser Glu Pro Glu Asn  
 130 135 140

Pro Ser Leu Gln Glu Thr Ser Leu Ser Val Gln Leu Ser Asn Leu Gly  
 145 150 155 160

Thr Val Arg Thr Leu Arg Thr Lys Gln Arg Ile Gln Pro Gln Lys Thr  
 165 170 175

Ser Val Tyr Ile Glu Leu Gly Ser Asp Ser Ser Glu Asp Thr Val Asn  
 180 185 190

Lys Ala Thr Tyr Cys Ser Val Gly Asp Gln Glu Leu Leu Gln Ile Thr  
 195 200 205

Pro Gln Gly Thr Arg Asp Glu Ile Ser Leu Asp Ser Ala Lys Lys Gly  
 210 215 220

Glu Ala Ala Ser Gly Cys Glu Ser Glu Thr Ser Val Ser Glu Asp Cys  
 225 230 235 240

Ser Gly Leu Ser Ser Gln Ser Asp Ile Leu Thr Thr Gln Gln Arg Asp  
 245 250 255

Thr Met Gln His Asn Leu Ile Lys Leu Gln Gln Glu Met Ala Glu Leu  
 260 265 270



Glu Ala Val Leu Glu Gln His Gly Ser Gln Pro Ser Asn Ser Tyr Pro  
 275 280 285

Ser Ile Ile Ser Asp Ser Ser Ala Leu Glu Asp Leu Arg Asn Pro Glu  
 290 295 300

Gln Ser Thr Ser Glu Lys Ala Val Leu Thr Ser Gln Lys Ser Ser Glu  
 305 310 315 320

Tyr Pro Ile Ser Gln Asn Pro Glu Gly Leu Ser Ala Asp Lys Phe Glu  
 325 330 335

Val Ser Ala Asp Ser Ser Thr Ser Lys Asn Lys Glu Pro Gly Val Glu  
 340 345 350

Arg Ser Ser Pro Ser Lys Cys Pro Ser Leu Asp Asp Arg Trp Tyr Met  
 355 360 365

His Ser Cys Ser Gly Ser Leu Gln Asn Arg Asn Tyr Pro Ser Gln Glu  
 370 375 380

Glu Leu Ile Lys Val Val Asp Val Glu Glu Gln Gln Leu Glu Glu Ser  
 385 390 395 400

Gly Pro His Asp Leu Thr Glu Thr Ser Tyr Leu Pro Arg Gln Asp Leu  
 405 410 415

Glu Gly Thr Pro Tyr Leu Glu Ser Gly Ile Ser Leu Phe Ser Asp Asp  
 420 425 430

Pro Glu Ser Asp Pro Ser Glu Asp Arg Ala Pro Glu Ser Ala Arg Val  
 435 440 445

Gly Asn Ile Pro Ser Ser Thr Ser Ala Leu Lys Val Pro Gln Leu Lys  
 450 455 460

Val Ala Glu Ser Ala Gln Ser Pro Ala Ala Ala His Thr Thr Asp Thr  
 465 470 475 480

Ala Gly Tyr Asn Ala Met Glu Glu Ser Val Ser Arg Glu Lys Pro Glu  
 485 490 495

Leu Thr Ala Ser Thr Glu Arg Val Asn Lys Arg Met Ser Met Val Val  
 500 505 510

Ser Gly Leu Thr Pro Glu Glu Phe Met Leu Val Tyr Lys Phe Ala Arg  
 515 520 525

Lys His His Ile Thr Leu Thr Asn Leu Ile Thr Glu Glu Thr Thr His  
 530 535 540

Val Val Met Lys Thr Asp Ala Glu Phe Val Cys Glu Arg Thr Leu Lys  
 545 550 555 560

Tyr Phe Leu Gly Ile Ala Gly Gly Lys Trp Val Val Ser Tyr Phe Trp  
 565 570 575

Val Thr Gln Ser Ile Lys Glu Arg Lys Met Leu Asn Glu His Asp Phe  
 580 585 590

Glu Val Arg Gly Asp Val Val Asn Gly Arg Asn His Gln Gly Pro Lys  
 595 600 605

Arg Ala Arg Glu Ser Gln Asp Arg Lys Ile Phe Arg Gly Leu Glu Ile  
 610 615 620

Cys Cys Tyr Gly Pro Phe Thr Asn Met Pro Thr Asp Gln Leu Glu Trp  
 625 630 635 640

Met Val Gln Leu Cys Gly Ala Ser Val Val Lys Glu Leu Ser Ser Phe  
 645 650 655

Thr Leu Gly Thr Gly Val His Pro Ile Val Val Val Gln Pro Asp Ala  
 660 665 670

Trp Thr Glu Asp Asn Gly Phe His Ala Ile Gly Gln Met Cys Glu Ala  
 675 680 685

Pro Val Val Thr Arg Glu Trp Val Leu Asp Ser Val Ala Leu Tyr Gln  
 690 695 700

Cys Gln Glu Leu Asp Thr Tyr Leu Ile Pro Gln Ile Pro His Ser His  
 705 710 715 720

Tyr

<210> 8

<211> 719

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 8

Met Pro Arg Arg Lys Lys Lys Val Lys Glu Val Ser Glu Ser Arg Asn  
 1 5 10 15

Leu Glu Lys Lys Asp Val Glu Thr Thr Ser Ser Val Ser Val Lys Arg  
 20 25 30

Lys Arg Arg Leu Glu Asp Ala Phe Ile Val Ile Ser Asp Ser Asp Gly  
 35 40 45

Glu Glu Pro Lys Glu Glu Asn Gly Leu Gln Lys Thr Lys Thr Lys Gln  
 50 55 60

Ser Asn Arg Ala Lys Cys Leu Ala Lys Arg Lys Ile Ala Gln Met Thr  
 65 70 75 80

Glu Glu Glu Gln Phe Ala Leu Ala Leu Lys Met Ser Glu Gln Glu Ala  
 85 90 95

Arg Glu Val Asn Ser Gln Glu Glu Glu Glu Glu Glu Leu Leu Arg Lys  
 100 105 110

Ala Ile Ala Glu Ser Leu Asn Ser Cys Arg Pro Ser Asp Ala Ser Ala  
 115 120 125

Thr Arg Ser Arg Pro Leu Ala Thr Gly Pro Ser Ser Gln Ser His Gln  
 130 135 140

Glu Lys Thr Thr Asp Ser Gly Leu Thr Glu Gly Ile Trp Gln Leu Val  
 145 150 155 160

Pro Pro Ser Leu Phe Lys Gly Ser His Ile Ser Gln Gly Asn Glu Ala  
 165 170 175

Glu Glu Arg Glu Glu Pro Trp Asp His Thr Glu Lys Thr Glu Glu Glu  
 180 185 190

Pro Val Ser Gly Ser Ser Gly Ser Trp Asp Gln Ser Ser Gln Pro Val  
 195 200 205

Phe Glu Asn Val Asn Val Lys Ser Phe Asp Arg Cys Thr Gly His Ser  
 210 215 220

Ala Glu His Thr Gln Cys Gly Lys Pro Gln Glu Ser Thr Gly Arg Gly  
 225 230 235 240

Ser Ala Phe Leu Lys Ala Val Gln Gly Ser Gly Asp Thr Ser Arg His  
 245 250 255

Cys Leu Pro Thr Leu Ala Asp Ala Lys Gly Leu Gln Asp Thr Gly Gly  
 260 265 270

Thr Val Asn Tyr Phe Trp Gly Ile Pro Phe Cys Pro Asp Gly Val Asp  
 275 280 285

Pro Asn Gln Tyr Thr Lys Val Ile Leu Cys Gln Leu Glu Val Tyr Gln  
 290 295 300

Lys Ser Leu Lys Met Ala Gln Arg Gln Leu Leu Asn Lys Lys Gly Phe  
 305 310 315 320

Gly Glu Pro Val Leu Pro Arg Pro Pro Ser Leu Ile Gln Asn Glu Cys  
 325 330 335

Gly Gln Gly Glu Gln Ala Ser Glu Lys Asn Gly Cys Ile Ser Glu Asp  
 340 345 350

Met Gly Asp Glu Asp Lys Glu Glu Arg Gln Glu Ser Arg Ala Ser Asp  
 355 360 365

Trp His Ser Lys Thr Lys Asp Phe Gln Glu Ser Ser Ile Lys Ser Leu  
 370 375 380

Lys Glu Lys Leu Leu Leu Glu Glu Glu Pro Thr Thr Ser His Gly Gln  
 385 390 395 400

Ser Ser Gln Gly Ile Val Glu Glu Thr Ser Glu Glu Gly Asn Ser Val  
 405 410 415

Pro Ala Ser Gln Ser Val Ala Ala Leu Thr Ser Lys Arg Ser Leu Val  
 420 425 430

Leu Met Pro Glu Ser Ser Ala Glu Glu Ile Thr Val Cys Pro Glu Thr  
 435 440 445

Gln Leu Ser Ser Ser Glu Thr Phe Asp Leu Glu Arg Glu Val Ser Pro

450		455		460
Gly Ser Arg Asp Ile Leu Asp Gly Val Arg Ile Ile Met Ala Asp Lys				
465		470		475
				480
Glu Val Gly Asn Lys Glu Asp Ala Glu Lys Glu Val Ala Ile Ser Thr				
		485		490
				495
Phe Ser Ser Ser Asn Gln Val Ser Cys Pro Leu Cys Asp Gln Cys Phe				
		500		505
				510
Pro Pro Thr Lys Ile Gly Arg His Ala Met Tyr Cys Asn Gly Leu Met				
		515		520
				525
Glu Glu Asp Thr Val Leu Thr Arg Arg Gln Lys Glu Ala Lys Thr Lys				
		530		535
				540
Ser Asp Ser Gly Thr Ala Ala Gln Thr Ser Leu Asp Ile Asp Lys Asn				
		545		550
				555
				560
Glu Lys Cys Tyr Leu Cys Lys Ser Leu Val Pro Phe Arg Glu Tyr Gln				
		565		570
				575
Cys His Val Asp Ser Cys Leu Gln Leu Ala Lys Ala Asp Gln Gly Asp				
		580		585
				590
Gly Pro Glu Gly Ser Gly Arg Ala Cys Ser Thr Val Glu Gly Lys Trp				
		595		600
				605
Gln Gln Arg Leu Lys Asn Pro Lys Glu Lys Gly His Ser Glu Gly Arg				
		610		615
				620
Leu Leu Ser Phe Leu Glu Gln Ser Glu His Lys Thr Ser Asp Ala Asp				
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				635
				640
Ile Lys Ser Ser Glu Thr Gly Ala Phe Arg Val Pro Ser Pro Gly Met				
		645		650
				655
Glu Glu Ala Gly Cys Ser Arg Glu Met Gln Ser Ser Phe Thr Arg Arg				
		660		665
				670
Asp Leu Asn Glu Ser Pro Val Lys Ser Phe Val Ser Ile Ser Glu Ala				
		675		680
				685

Thr Asp Cys Leu Val Asp Phe Lys Lys Gln Val Thr Val Gln Pro Gly  
 690 695 700

Ser Arg Thr Arg Thr Lys Ala Gly Arg Gly Arg Arg Arg Lys Phe  
 705 710 715

<210> 9  
 <211> 415  
 <212> PRT  
 <213> Homo sapiens

<400> 9

Met Ser Pro Glu Val Ala Leu Asn Arg Ile Ser Pro Met Leu Ser Pro  
 1 5 10 15

Phe Ile Ser Ser Val Val Arg Asn Gly Lys Val Gly Leu Asp Ala Thr  
 20 25 30

Asn Cys Leu Arg Ile Thr Asp Leu Lys Ser Gly Cys Thr Ser Leu Thr  
 35 40 45

Pro Gly Pro Asn Cys Asp Arg Phe Lys Leu His Ile Pro Tyr Ala Gly  
 50 55 60

Glu Thr Leu Lys Trp Asp Ile Ile Phe Asn Ala Gln Tyr Pro Glu Leu  
 65 70 75 80

Pro Pro Asp Phe Ile Phe Gly Glu Asp Ala Glu Phe Leu Pro Asp Pro  
 85 90 95

Ser Ala Leu Gln Asn Leu Ala Ser Trp Asn Pro Ser Asn Pro Glu Cys  
 100 105 110

Leu Leu Leu Val Val Lys Glu Leu Val Gln Gln Tyr His Gln Phe Gln  
 115 120 125

Cys Ser Arg Leu Arg Glu Ser Ser Arg Leu Met Phe Glu Tyr Gln Thr  
 130 135 140

Leu Leu Glu Glu Pro Gln Tyr Gly Glu Asn Met Glu Ile Tyr Ala Gly  
 145 150 155 160

Lys Lys Asn Asn Trp Thr Gly Glu Phe Ser Ala Arg Phe Leu Leu Lys  
 165 170 175

Leu Pro Val Asp Phe Ser Asn Ile Pro Thr Tyr Leu Leu Lys Asp Val  
 180 185 190

Asn Glu Asp Pro Gly Glu Asp Val Ala Leu Leu Ser Val Ser Phe Glu  
 195 200 205

Asp Thr Glu Ala Thr Gln Val Tyr Pro Lys Leu Tyr Leu Ser Pro Arg  
 210 215 220

Ile Glu His Ala Leu Gly Gly Ser Ser Ala Leu His Ile Pro Ala Phe  
 225 230 235 240

Pro Gly Gly Gly Cys Leu Ile Asp Tyr Val Pro Gln Val Cys His Leu  
 245 250 255

Leu Thr Asn Lys Val Gln Tyr Val Ile Gln Gly Tyr His Lys Arg Arg  
 260 265 270

Glu Tyr Ile Ala Ala Phe Leu Ser His Phe Gly Thr Gly Val Val Glu  
 275 280 285

Tyr Asp Ala Glu Gly Phe Thr Lys Leu Thr Leu Leu Leu Met Trp Lys  
 290 295 300

Asp Phe Cys Phe Leu Val His Ile Asp Leu Pro Leu Phe Phe Pro Arg  
 305 310 315 320

Asp Gln Pro Thr Leu Thr Phe Gln Ser Val Tyr His Phe Thr Asn Ser  
 325 330 335

Gly Gln Leu Tyr Ser Gln Ala Gln Lys Asn Tyr Pro Tyr Ser Pro Arg  
 340 345 350

Trp Asp Gly Asn Glu Met Ala Lys Arg Ala Lys Gly Cys Gln Gly Ser  
 355 360 365

Arg Asp Ala Cys Ser Pro Trp Glu Gln Val Leu Ala Phe Ala Val Ala  
 370 375 380

Lys Thr Gly Cys Lys Leu Leu Gln Pro Gln Arg Asn Trp Pro Ser Ser  
 385 390 395 400

Arg Gly Pro Pro Trp Arg Ala Ser Glu Gly Glu Arg Thr Ala Gln  
 405 410 415

<210> 10  
 <211> 316  
 <212> PRT  
 <213> Homo sapiens

<400> 10

Met Ala Val Gln Val Val Gln Ala Val Gln Ala Val His Leu Glu Ser  
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Asp Ala Phe Leu Val Cys Leu Asn His Ala Leu Ser Thr Glu Lys Glu  
 20 25 30

Glu Val Met Gly Leu Cys Ile Gly Glu Leu Asn Asp Asp Thr Arg Ser  
 35 40 45

Asp Ser Lys Phe Ala Tyr Thr Gly Thr Glu Met Arg Thr Val Ala Glu  
 50 55 60

Lys Val Asp Ala Val Arg Ile Val His Ile His Ser Val Ile Ile Leu  
 65 70 75 80

Arg Arg Ser Asp Lys Arg Lys Asp Arg Val Glu Ile Ser Pro Glu Gln  
 85 90 95

Leu Ser Ala Ala Ser Thr Glu Ala Glu Arg Leu Ala Glu Leu Thr Gly  
 100 105 110

Arg Pro Met Arg Val Val Gly Trp Tyr His Ser His Pro His Ile Thr  
 115 120 125

Val Trp Pro Ser His Val Asp Val Arg Thr Gln Ala Met Tyr Gln Met  
 130 135 140

Met Asp Gln Gly Phe Val Gly Leu Ile Phe Ser Cys Phe Ile Glu Asp  
 145 150 155 160

Lys Asn Thr Lys Thr Gly Arg Val Leu Tyr Thr Cys Phe Gln Ser Ile  
 165 170 175

Gln Ala Gln Lys Ser Ser Glu Ser Leu His Gly Pro Arg Asp Phe Trp  
 180 185 190

Ser Ser Ser Gln His Ile Ser Ile Glu Gly Gln Lys Glu Glu Glu Arg  
 195 200 205



Tyr Glu Arg Ile Glu Ile Pro Ile His Ile Val Pro His Val Thr Ile  
 210 215 220

Gly Lys Val Cys Leu Glu Ser Ala Val Glu Leu Pro Lys Ile Leu Cys  
 225 230 235 240

Gln Glu Glu Gln Asp Ala Tyr Arg Arg Ile His Ser Leu Thr His Leu  
 245 250 255

Asp Ser Val Thr Lys Ile His Asn Gly Ser Val Phe Thr Lys Asn Leu  
 260 265 270

Cys Ser Gln Met Ser Ala Val Ser Gly Pro Leu Leu Gln Trp Leu Glu  
 275 280 285

Asp Arg Leu Glu Gln Asn Gln Gln His Leu Gln Glu Leu Gln Gln Glu  
 290 295 300

Lys Glu Glu Leu Met Gln Glu Leu Ser Ser Leu Glu  
 305 310 315

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 <211> 777  
 <212> PRT  
 <213> Homo sapiens

<400> 11

Met Pro Asp Asn Arg Gln Pro Arg Asn Arg Gln Pro Arg Ile Arg Ser  
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Gly Asn Glu Pro Arg Ser Ala Pro Ala Met Glu Pro Asp Gly Arg Gly  
 20 25 30

Ala Trp Ala His Ser Arg Ala Ala Leu Asp Arg Leu Glu Lys Leu Leu  
 35 40 45

Arg Cys Ser Arg Cys Thr Asn Ile Leu Arg Glu Pro Val Cys Leu Gly  
 50 55 60

Gly Cys Glu His Ile Phe Cys Ser Asn Cys Val Ser Asp Cys Ile Gly  
 65 70 75 80

Thr Gly Cys Pro Val Cys Tyr Thr Pro Ala Trp Ile Gln Asp Leu Lys  
 85 90 95

Ile	Asn	Arg	Gln	Leu	Asp	Ser	Met	Ile	Gln	Leu	Cys	Ser	Lys	Leu	Arg
			100					105					110		
Asn	Leu	Leu	His	Asp	Asn	Glu	Leu	Ser	Asp	Leu	Lys	Glu	Asp	Lys	Pro
		115					120					125			
Arg	Lys	Ser	Leu	Phe	Asn	Asp	Ala	Gly	Asn	Lys	Lys	Asn	Ser	Ile	Lys
	130					135						140			
Met	Trp	Phe	Ser	Pro	Arg	Ser	Lys	Lys	Val	Arg	Tyr	Val	Val	Ser	Lys
145					150					155					160
Ala	Ser	Val	Gln	Thr	Gln	Pro	Ala	Ile	Lys	Lys	Asp	Ala	Ser	Ala	Gln
				165					170					175	
Gln	Asp	Ser	Tyr	Glu	Phe	Val	Ser	Pro	Ser	Pro	Pro	Ala	Asp	Val	Ser
			180					185					190		
Glu	Arg	Ala	Lys	Lys	Ala	Ser	Ala	Arg	Ser	Gly	Lys	Lys	Gln	Lys	Lys
		195					200					205			
Lys	Thr	Leu	Ala	Glu	Ile	Asn	Gln	Lys	Trp	Asn	Leu	Glu	Ala	Glu	Lys
	210					215					220				
Glu	Asp	Gly	Glu	Phe	Asp	Ser	Lys	Glu	Glu	Ser	Lys	Gln	Lys	Leu	Val
225					230					235					240
Ser	Phe	Cys	Ser	Gln	Pro	Ser	Val	Ile	Ser	Ser	Pro	Gln	Ile	Asn	Gly
				245					250					255	
Glu	Ile	Asp	Leu	Leu	Ala	Ser	Gly	Ser	Leu	Thr	Glu	Ser	Glu	Cys	Phe
			260					265					270		
Gly	Ser	Leu	Thr	Glu	Val	Ser	Leu	Pro	Leu	Ala	Glu	Gln	Ile	Glu	Ser
		275					280					285			
Pro	Asp	Thr	Lys	Ser	Arg	Asn	Glu	Val	Val	Thr	Pro	Glu	Lys	Val	Cys
	290					295					300				
Lys	Asn	Tyr	Leu	Thr	Ser	Lys	Lys	Ser	Leu	Pro	Leu	Glu	Asn	Asn	Gly
305					310				315						320
Lys	Arg	Gly	His	His	Asn	Arg	Leu	Ser	Ser	Pro	Ile	Ser	Lys	Arg	Cys
			325					330						335	

Arg Thr Ser Ile Leu Ser Thr Ser Gly Asp Phe Val Lys Gln Thr Val  
 340 345 350

Pro Ser Glu Asn Ile Pro Leu Pro Glu Cys Ser Ser Pro Pro Ser Cys  
 355 360 365

Lys Arg Lys Val Gly Gly Thr Ser Gly Arg Lys Asn Ser Asn Met Ser  
 370 375 380

Asp Glu Phe Ile Ser Leu Ser Pro Gly Thr Pro Pro Ser Thr Leu Ser  
 385 390 395 400

Ser Ser Ser Tyr Arg Gln Val Met Ser Ser Pro Ser Ala Met Lys Leu  
 405 410 415

Leu Pro Asn Met Ala Val Lys Arg Asn His Arg Gly Glu Thr Leu Leu  
 420 425 430

His Ile Ala Ser Ile Lys Gly Asp Ile Pro Ser Val Glu Tyr Leu Leu  
 435 440 445

Gln Asn Gly Ser Asp Pro Asn Val Lys Asp His Ala Gly Trp Thr Pro  
 450 455 460

Leu His Glu Ala Cys Asn His Gly His Leu Lys Val Val Glu Leu Leu  
 465 470 475 480

Leu Gln His Lys Ala Leu Val Asn Thr Thr Gly Tyr Gln Asn Asp Ser  
 485 490 495

Pro Leu His Asp Ala Ala Lys Asn Gly His Val Asp Ile Val Lys Leu  
 500 505 510

Leu Leu Ser Tyr Gly Ala Ser Arg Asn Ala Val Asn Ile Phe Gly Leu  
 515 520 525

Arg Pro Val Asp Tyr Thr Asp Asp Glu Ser Met Lys Ser Leu Leu Leu  
 530 535 540

Leu Pro Glu Lys Asn Glu Ser Ser Ser Ala Ser His Cys Ser Val Met  
 545 550 555 560

Asn Thr Gly Gln Arg Arg Asp Gly Pro Leu Val Leu Ile Gly Ser Gly

575

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<210> 12
<211> 10987
<212> DNA
<213> Homo sapiens
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 ctggagcgga cttatttacc aagcattgga ggaatatcgt aggtaaaaat gcctattgga 240  
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 ggatttgga aaacatcagg gaattcattt aaagtaaata gctgcaaaga ccacattgga 1080  
 aagtcaatgc caaatgtcct agaagatgaa gtatatgaaa cagttgtaga tacctctgaa 1140  
 gaagatagtt tttcattatg tttttctaaa tgtagaacia aaaatctaca aaaagtaaga 1200  
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